

SCOTIA COAL MINE DISASTER

MARCH 9 AND 11, 1976

A STAFF REPORT

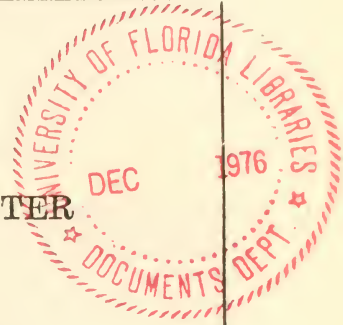


OCTOBER 15, 1976

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Prepared by the staff of the House Committee on Education and Labor,
Subcommittee on Labor Standards, John H. Dent, Chairman

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INTRODUCTION AND SUMMARY

On March 9, 1976, at 11:35 A.M., dangerous concentrations of methane gas accumulated in a poorly ventilated section of the Scotia Coal Mine and was ignited by an unknown source. The coal mine explosion that resulted killed 15 miners. Again, on March 11, 1976, at about 11:20 P.M., the same conditions combined in the same section of the Scotia mine to cause a second explosion in which another 11 men died. Thus, within a 60-hour period, 26 men lost their lives in the bowels of the Scotia coal mine, located near Oven Fork, in Eastern Kentucky. As of this date, the bodies of the 11 men killed in the second explosion remain entombed in the mine.

Why did Scotia happen? This same question was asked of the Farmington disaster in 1968 which claimed the lives of 78 coal miners; the Hyden disaster of 1970 which killed 38 miners; and the Itmann and Blackville disasters of 1972 in which 14 died.

In 1969, the U.S. Congress responded to the Farmington disaster by enacting the Federal Coal Mine Health and Safety Act, which is, perhaps, the strongest such law in the world. Since the passage of the Federal Coal Mine Health and Safety Act of 1969, over 1,000 coal miners have died in mine explosions, roof falls, and other coal mine accidents.

Why did Scotia happen? Since the disaster, the House Education and Labor Committee, under the direction of Chairman Carl Perkins and Labor Standards Subcommittee Chairman John H. Dent, has been searching for answers and insights into the Scotia tragedy. In conjunction with the Senate Committee on Labor and Public Welfare, the Committee held three days of public hearings in Washington, D.C. and Whitesburg, Kentucky. The Committee heard from Scotia widows, miners, company officials, outside professionals, and Federal Government officials. The Committee and its staff reviewed thousands of pages of testimony, conducted individual interviews, and analyzed mine inspection reports and other related documents.

In order to inform the full Committee, and the public at-large, as to what has been learned thus far about the Scotia disaster, Mr. Perkins and Mr. Dent instructed the staff to prepare this report. The views contained herein are those of the majority staff, and do not necessarily represent those of the Committee.

Why did Scotia happen? While all the causal factors related to the disaster have yet to be conclusively determined, the available evidence strongly supports the following conclusions:

1. The Scotia Coal Company, in effect, ignored the requirements of the Federal Coal Mine Health and Safety Act, its standards and administrative regulations;
2. The Mining Enforcement and Safety Administration (MESA) failed to effectively enforce the Federal Coal Mine Health and Safety Act at the mine;

3. Ultimate responsibility for the first explosion of March 9, 1976, rests with the Scotia Coal Company, but responsibility for the second explosion of March 11, 1976, must, in the staff's opinion, rest with MESA.

The Scotia Coal Mine, near Oven Fork, Kentucky, was known as one of the most dangerous mines in the United States and the most gassy mine in Eastern Kentucky. In addition, the Scotia mine had a long and chronic history of Federal coal mine health and safety violations. From 1970 to 1976, the Scotia mine had been ordered closed 110 separate times—39 times for imminent danger conditions. During this same period, some 855 notices for Federal health and safety violations had been issued against the company. In the period January 1974 to February 1976, the mine had been cited for 63 separate violations of Federal ventilation and methane standards.

In addition, the record contains evidence that:

- The Scotia mine's ventilation plan was regularly violated and, at the time of the first explosion, Scotia was in violation of its ventilation plan;
- At various times, methane readings taken by the company officials had registered as high as 9 percent;
- The required 20 minute methane monitoring regulation was repeatedly violated and seldom adhered to at the Scotia mine;
- Required preshift mine inspections for hazardous ventilation, methane and other conditions were not regularly conducted at the Scotia mine: preshift inspection reports were routinely falsified; and the section of the mine which exploded had not been inspected prior to the shift in which the first explosion occurred;
- A methane gas feeder which measured at least 5 percent had existed in that section of the mine which exploded;
- The company's safety education and training program was a sham, and no one, including the company's safety inspector, could remember the last time a fire or mine evacuation drill had been conducted at the Scotia mine. Six of the 15 miners killed in the first explosion suffocated to death.

From the record, it is clear that the Scotia mine was a bad mine, a dangerous mine, a mine with a long and chronic history of health and safety violations. It was a mine which in our opinion placed production and profit before the safety and health of its miners. It was a mine which essentially ignored the law.

In the staff's opinion, the Scotia mine was permitted to operate in disregard of the law primarily because MESA failed to adequately and effectively enforce the Coal Mine Health and Safety Act in such a manner so as to effectuate lasting and permanent compliance. MESA failed to test its imminent danger authority to determine whether—based upon a mine's prior history of violations—the operation of a mine like Scotia, in-and-of-itself, could be considered as imminently dangerous and therefore ordered closed until such time that the chronic safety and health problems were permanently abated. Aside from failing to test its imminent danger authority, MESA also failed to effectively use its established mine closure authority to impress upon Scotia the severity of its mine safety and health problems. Although prior to the explosion MESA closed the mine 110 times, the record indicates that the overwhelming majority of these closure orders were

lifted the same day they were issued, thus having a minimal effect on production. While MESA had the authority to repeatedly close the Scotia mine for unwarrantable failure to comply with health and safety standards, the record shows that MESA used this authority sparingly. In the 15 month period prior to the explosions, Scotia violated the Federal ventilation standards 33 times, but MESA only issued 4 unwarrantable failure to comply closure orders, all of which were lifted the same day they were issued. Even though Scotia's safety record indicated willful and knowing violations, MESA never once brought criminal charges against the Company.

In terms of the assessment and collection of monetary fines, MESA's record at Scotia was abominable. The record indicates that monetary penalty assessments were low to begin with, and the amounts actually collected were even lower; as much as 50 percent lower. On only three occasions did MESA ever assess the maximum civil penalty of \$10,000 against Scotia; two of these cases involved deaths and the other involved serious physical injuries. Only one of the death cases has been resolved, and MESA settled out of court for \$5,500; a reduction of 45 percent. The highest penalty ever assessed against Scotia for a ventilation violation was \$582 of which MESA only collected \$291; a reduction of 50 percent. MESA's monetary penalty record at the Scotia mine indicates that both assessments and collections were neither progressive nor cumulative. As a matter of fact the record shows that as Scotia continued to violate the law, both assessed and collected amounts either remained the same or were lower than previous amounts for similar violations.

The history of MESA inspection efforts at the Scotia mine indicates serious shortcomings including an over-reliance on one-man spot inspections; poor procedures for reviewing and evaluating ventilation plans; and inadequate information systems. Since 1970, MESA has conducted some 225 one-man spot inspections of the Scotia mine compared to only 23 "regular" inspections of the entire mine. Spot inspections check only for limited conditions in a short period of time. The day before the first explosion, MESA conducted a limited inspection of the Scotia mine which failed to include that section of the mine where both explosions occurred. At the time of the first explosion, Scotia was in violation of its ventilation plan for more than a month, yet MESA was unaware of the violation until a week before the first explosion and, even then, failed to take any action. MESA's information system was such that local MESA officials failed to adequately use the information they had on the history of violations at the Scotia mine, and the flow of this information never reached top MESA national officials.

Thus, when viewed in its entirety, MESA's enforcement record at the Scotia mine was one of ineffectiveness. Nothing more clearly demonstrates this ineffectiveness than the fact that after some 1,000 man days of inspection and enforcement activity, the Scotia mine continued to be operated as an unsafe and dangerous mine.

In terms of the explosions themselves, all of the causal factors have yet to be fully determined. However, it is known that both explosions occurred in the same section of the mine; the 2 Southeast main section. In addition, there is a general consensus that both explosions resulted from an explosive build-up of methane gas which accumulated in the

poorly ventilated 2 Southeast main section and was ignited by an undetermined source.

With respect to the first explosion of March 9th, the record supports the following findings:

1. The nature of the MESA inspection on March 8th, less than 24 hours before the first explosion, was limited in both purpose and scope and did not include that section of the mine where the explosion occurred 2 Southeast main.

2. That section of the mine which exploded—2 Southeast main—was not subjected to the required preshift mine examination prior to two locomotives (operated by two Scotia miners killed in the explosion) entering the section on the morning of March 9th. The explosion occurred minutes after the locomotives—one fitted with a questionable air compressor—entered 2 Southeast main.

3. About a month before the explosion, Scotia temporarily discontinued active mining in 2 Southeast main, and initiated production in the 2 Left panel, off 2 Southeast main. This new production violated Scotia's approved ventilation plan and may have interrupted the ventilation system.

4. A methane gas feeder was known to exist near the face of 2 Southeast main.

5. Ventilation problems were experienced in the 2 Left panel, off 2 Southeast main, both the day before and immediately prior to the explosion.

6. Scotia officials engaged in questionable practices in an effort to "correct" the ventilation problems uncovered in the March 8th MESA inspection.

7. While the exact source of ignition has yet to be determined, there is some evidence to support the conclusion that the ignition was somehow related to the activity of the two locomotives entering the 2 Southeast main section: Most of the explosion-related mine damage was reported to be in the immediate area of the two locomotives, and the explosion occurred only minutes after the locomotives entered 2 Southeast main.

8. Six of the fifteen miners who were killed on March 9th survived the initial explosion but subsequently suffocated to death after their self-rescue equipment became inoperable. Professional testimony indicated that these six men probably could have saved themselves by simply walking out of the mine following the initial blast.

Within a few hours of the first explosion, MESA officials assumed effective control of the Scotia mine and directed all the rescue, recovery and investigation efforts. Throughout this period MESA was responsible for all decisions and actions related to the Scotia mine disaster. It was MESA officials who made the decision to send a 13-man work crew into the mine on March 11, to repair a damaged roof and to restore ventilation. At 11:20 P.M. on March 11, this 13-man crew was caught in the second Scotia explosion which, like the first explosion, originated in the 2 Southeast main section of the mine. Eleven men died in the blast and two survived.

With respect to the environmental conditions in the mine between the two explosions, the following is known:

- Nearly all the physical mine damage resulting from the first explosion was found in the area of the two locomotives located in the upper portions of 2 Southeast main;

- Dangerous concentrations of methane gas and carbon monoxide were found in 2 Southeast main by the rescue teams on March 9-10;
- Work crews and rescue teams on March 9-10 were unable to restore ventilation to the 2 Southeast main section;
- A hazardous roof condition was found at the entrance to 2 Southeast main;
- Perhaps most importantly, the upper portions of 2 Southeast main were not inspected or firebossed for hazardous conditions. From the time the rescue teams recovered the bodies of the two locomotive men, killed in the first explosion, until now, no one has been in the 2 Southeast main section of the Scotia mine. Thus, at the time the 13-man work crew approached the entrance to 2 Southeast main to repair the damaged roof on March 11, the hazardous environmental conditions in 2 Southeast main were unknown.

As in the case of the first explosion, the ignition source of the second explosion has yet to be determined. However, unlike the first explosion, there is evidence indicating that the responsible MESA officials failed to seriously consider at least one possible ignition source that was known to exist prior to the second explosion—one of the locomotives fitted with a questionable air compressor.

This machine, a Goodman locomotive, was one of the locomotives sent into that section of the mine which exploded on March 9. The air compressor on the Goodman locomotive was an integral part of the machine's braking system and automatically "kicked on" when the air pressure dropped below a certain point. According to testimony, the compressor "kicked on" automatically about every 15 to 20 minutes, and whenever engaged it caused a substantial spark which was more than sufficient to ignite an explosive concentration of methane gas. This locomotive-compressor, which could have caused the first explosion, remained in the mine following the initial explosion and remains there today.

In terms of the decisions made by MESA in the period between explosions, the most critical decision was to send the 13-man work crew back into the mine on March 11, after previous attempts to restore ventilation in 2 Southeast main had failed. The hearing record strongly suggests that this decision was made simply as a matter of routine and without due regard for the possible hazards involved. Prior to the men entering the mine on March 11, MESA officials knew that something was wrong with the ventilation in 2 Southeast main; they knew of dangerous concentrations of methane in that section; they knew of the Goodman locomotive; and they knew that 2 Southeast main had not been subject to a preshift examination; yet the fateful decision was made with little or no thought given to these factors, and the work crew was sent into the mine without any instructions as to the possible hazards involved.

Why did Scotia happen? In the opinion of the committee staff the Scotia coal mine disasters of March 9 and March 11, 1976 had their roots in the past practices of the Scotia Coal Company. The disasters happened because MESA failed to effectively enforce the law at the Scotia coal mine. The March 9th explosion happened because deadly concentrations of methane gas were permitted to accumulate in a

poorly ventilated section of the mine where men were sent to work. The March 11th explosion occurred because MESA failed to adequately consider the possible hazards involved in men working near the mine section where ventilation had not been restored and which evidenced explosive concentrations of methane gas.

Throughout the hearings conducted by the House Education and Labor Committee and the Senate Labor and Public Welfare Committee, MESA officials repeatedly stated that as coal mines go, the Scotia mine was not considered as particularly hazardous. If this is true; if there are coal mines which are more dangerous than Scotia and with safety and health records as bad as Scotia's, then how many more Scotias are out there just waiting to explode? Must our coal miners simply rely on fate and good luck each time they go into a coal mine? The Congress, in 1969, enacted the Coal Mine Health and Safety Act in order to replace luck and fate with strong and vigorous preventive measures. The law was enacted to *prevent* coal mine explosions, roof falls and other accidents which since 1969 have claimed over 1,000 lives and injured thousands more.

The Coal Mine Health and Safety Act is a good law, it is a strong and progressive law. But the law is only as good, as strong and as progressive as its enforcement. As this report documents, enforcement of the Coal Mine Health and Safety Act at the Scotia mine was neither vigorous nor effective. We sincerely hope that when all the factors related to the Scotia disaster are finally determined, that effective government action will be taken to prevent another Scotia.

BACKGROUND AND CHRONOLOGY OF EVENTS: SCOTIA COAL MINE DISASTERS, MARCH 9 AND MARCH 11, 1976

BACKGROUND

Blue Diamond Coal Company Inc. is a Knoxville, Tennessee firm that produces about 2.3 million tons of coal a year in Kentucky. It is the parent company of the Scotia Coal Company whose No. 1 mine under Black Mountain in Letcher County exploded on March 9 and March 11, 1976, killing 26 men.

The Blue Diamond Company is headquartered at 6205 Kingston Pike, Knoxville, Tennessee. The top corporate officers of the parent firm and the two wholly owned affiliates are Joseph W. Hoffman, president; Gordon Bonnyman, board chairman; and R. H. Watson, vice president for operations. Blue Diamond is the selling agent for the Company's six coal brands; Leatherwood, Blue Diamond, Royal Scott, Starfire, Mayflower, and Tennessee Group.

Blue Diamond's oldest and largest Kentucky operation is at Leatherwood in Perry County, near the boundaries of Harlan and Leslie Counties. It acquired the Scotia property in 1962 and started operations in three seams in 1963. Two seams are above drainage and considered "non-gassy" by state standards. The No. 1 seam is below drainage and has long been classified as "gassy."

The Company has recognized the Southern Labor Union (SLU) as its bargaining agent at Leatherwood. However, miners at the Scotia Coal Company are represented by the Scotia Employees Association.

Access at the Scotia Mine No. 1 into the Imboden coal seam is achieved through one 400-foot deep mine shaft. Air circulation is

forced into the mine by a fan circulating approximately 200,000 cubic feet of air per minute through the mine. Intake air comes into the mine at two locations. Coal is mined by continuous miners and is transported by shuttle cars onto conveyors. Permissible battery-powered equipment is used for transporting the men from the surface to the working places in the mine. The Scotia mine liberates in the range of 200,000 to 500,000 cubic feet of methane per 24 hours, with the most active production of methane being at the mining faces. The explosions which occurred on March 9 and March 11, 1976, occurred in the 2 Southeast main (2 SEM) section of the mine.

CHRONOLOGY

January-February 1976.—MESA conducted an 8-week inspection of entire Scotia No. 1 mine.

February 1976.—Mining in 2 Southeast main (2 SEM) section was discontinued due to the height of the coal seam and lack of equipment. Mining machinery was moved back from the face of 2 SEM and mining was begun in the 2 Left panel, off 2 SEM.

March 1976.—Scotia submitted to M.E.S.A. a proposed new ventilation plan for the mine.

March 8, 1976, 2nd shift.—M.E.S.A. Coal Mine Health Technical Specialist Cecil Davis, stationed at Whitesburg, Kentucky made an inspection of the 2 Left panel, off 2 SEM. Davis issued 4 notices of violations, 2 of which were for ventilation problems. Davis, did not inspect 2 SEM.

March 8-9, 1976, 3rd shift.—Scotia fire boss Charles Fields conducted a preshift examination of Scotia mine but failed to inspect 2 SEM.

March 9, 1976

During the morning, two miners were sent into 2 SEM to take steel rails into the section for storage. Two locomotives were used to push steel loaded cars into the area.

11 a.m.—James Bentley, Assistant mine foreman in charge of ventilation, noticed a regulator governing air intake had been left open, thereby changing ventilation patterns in mine. Bentley closed the regulator.

11:15 a.m.—Bentley called the mine foreman, and asked for a ventilation check. Bentley then called Virgil Coots, foreman on 2 Left panel off 2 SEM and asked for air reading. Coots said he "just lost" his ventilation. Bentley told him to check his curtains and call him back. Time about 11:30.

11:35 a.m.—First Explosion occurred in 2 SEM.

12:26 p.m.—Scotia reported accident to M.E.S.A.'s Whitesburg, Kentucky office as ignition.

12:45 p.m.—Scotia informed M.E.S.A. of an explosion with 16 men unaccounted for; M.E.S.A. Inspectors were dispatched.

12:50 p.m.—M.E.S.A.'s Pikeville office notified M.E.S.A. national office in Arlington, Virginia of the accident.

1:10 p.m.—M.E.S.A. inspectors at mine issued 103(f) order, effectively controlling entry into Scotia mine.

3 p.m.—Scotia personnel attempted rescue efforts but failed to make any progress.

3 p.m.—First mine rescue teams arrived; Other teams continued to arrive until 11:00 p.m. that evening.

3:15 p.m.—M.E.S.A. officials Monroe West, Subdistrict Manager, Norton, Kentucky office and William Clemons, Assistant District Manager Pikeville, Kentucky office arrived at the mine. Charles Sample, M.E.S.A. Coal Mine Inspection Supervisor, Harlan, Kentucky arrived soon after. West and Sample went underground to direct rescue operations; Clemons took charge on the surface.

4:30 p.m.—First mine rescue team went underground.

4:35 p.m.—Second mine rescue team went underground.

6:55 p.m.—First fresh air base established.

8:30 p.m.—M.E.S.A. Administrator Robert Barrett, Assistant Administrator John Crawford, and R. Peluso, Assistant Administrator Technical Support, arrived at the mine. After briefing, all three went underground.

10 p.m.—Barrett and company arrived at the fresh air base and began assisting in the operations.

10:15 p.m.—First body was found in area of 2 SEM by the Westmoreland Coal Company rescue team.

March 10, 1976

1:20 a.m.—All 15 bodies were located and removed. Five bodies were located in main shaft of 2 SEM at the intersection of 2 Left panel, and eight bodies were discovered behind a makeshift curtain barricade in the 2 Left panel. Two bodies were discovered by National Mine Rescue team farther up 2 SEM towards face near the two locomotives. Mine area in the vicinity of the locomotives which was described as showing the most damage.

4:46 a.m.—The bodies arrived at the surface. All personnel were withdrawn from mine.

Early morning hours.—A meeting of M.E.S.A., state, company officials and miners was held to decide future actions. It was decided that M.E.S.A. rescue teams and Scotia personnel would work during the 2nd shift to restore ventilation to mine. It was also agreed to reenter mine for an inspection tour beginning at 7:00 A.M. on 3-11-76. After this meeting, M.E.S.A. Washington personnel departed.

7:30-8 a.m.—William Clemons went home; Russell Tackett of M.E.S.A. was left in charge. Clemons returned to mine later in the day; prior to 2nd shift, and resumed control.

5 p.m.—At the suggestion of Ben Taylor, M.E.S.A. Coal Mine Inspection Supervisor, Whitesburg, Kentucky, Taylor and Richard Combs, Scotia General mine foreman, began to pre-shift inspect part of mine (not up 2 SEM). Taylor was told by Combs of a compressor on a locomotive near face of 2 SEM. Taylor asked Combs if locomotive-compressor could have been a possible ignition source. Taylor did not immediately report this conversation to other officials.

6:55 p.m.—Two M.E.S.A. teams entered the mine to reestablish ventilation and explore 2 SEM. They discovered a hazardous roof condition. They also determined that ventilation would be difficult to restore.

March 11, 1976

12:48 a.m.—M.E.S.A. teams returned to the surface and reported the roof condition and ventilation problems.

2:05 a.m.—Company, M.E.S.A. and State officials met to decide future course of action. At the meeting, it was decided to postpone

a proposed inspection tour until roof repairs were made and ventilation restored. It was decided to begin the repair work on 2nd shift, later in the day.

4 a.m.—William Clemons left the mine; John South and John Banks, two M.E.S.A. inspectors, were put in charge. Clemons returned at 2:30–3:00 p.m. and resumed control.

8:14 a.m.—M.E.S.A. and Scotia employees inspected the mine for hazardous conditions except for the 2 SEM section where ventilation had not been restored.

6 p.m.—Thirteen men, including three M.E.S.A. inspectors, went underground to repair the roof and restore ventilation. Since the roof bolting machine needed to be repaired and moved to 2 SEM, the team did not arrive near the entrance to 2 SEM until much later.

7–8 p.m.—Ben Taylor of M.E.S.A. returned to the mine after resting and told Clemons about the locomotive and compressor in 2 SEM. Clemons did not consider it important.

9 p.m.—William Clemons went home, Ben Taylor was left in charge

11:20 p.m.—Second Explosion occurred in 2 SEM. Rick Parker and Ernest Collins, the two survivors, worked their way to belt telephone and made the first call, reporting the explosion.

11:40 p.m.—News of explosion reached surface by way of the survivors phone call. Taylor, fearing further danger, did not attempt a rescue effort. Taylor called Clemons and relayed the information.

March 12, 1976

12:12 a.m.—The two Survivors reached good air and made 2nd phone call. Survivors were told to wait for help, but they continued.

12:20 a.m.—Rescue men were sent into mine for survivors who were found close to the mine entrance. Rescue teams were contacted.

12:59 a.m.—William Clemons returned to the mine and resumed control. Rescue attempts were made to reach the trapped miners but because of an air reversal, the attempts were abandoned.

6:55 a.m.—Two M.E.S.A. inspectors and miner representative were lowered down an air shaft where the air was adequate.

9:45 a.m.—Three rescue teams were lowered down the shaft into mine.

12 noon—Eleven bodies were found but not recovered.

1:02 p.m.—All rescue teams brought to surface.

March 19, 1976

2:10 p.m.—Mine ordered sealed.

March 24, 1976

Public Hearings conducted in Washington, D.C. by the Senate Subcommittee on Labor of the Committee on Labor and Public Welfare.

April 5–9, and April 27–30, 1976

Public hearings conducted in Whitesburg, Kentucky by the Mining Enforcement and Safety Administration.

May 7, 1976

Joint Public Hearing conducted by the Senate Committee on Labor and Public Welfare and House Committee on Education and Labor, at Whitesburg, Kentucky.

May 13, 1976

Joint Public Hearing conducted by the Senate Committee on Labor and Public Welfare and House Committee on Education and Labor in Washington, D.C.

June 16, 1976

Joint Public Hearings conducted by The Senate Committee on Labor and Public Welfare and House Committee on Education and Labor in Washington, D.C.

June 18, 1976

A press conference was conducted by M.E.S.A. in Whitesburg, Kentucky to announce tentative plans to reopen Scotia mine.

July 16, 1976

The reopening of the mine was begun.

SAFETY HISTORY OF THE SCOTIA MINE

The Scotia Coal Mine, near Oven Fork, Kentucky, which exploded on March 9 and March 11, 1976, had a long and chronic history of coal mine safety and health violations.

Mining Enforcement and Safety Administration (MESA) officials have indicated that the Scotia mine was one of the most dangerous coal mines in the United States. In addition to being the most gassy mine in Eastern Kentucky, it had an abominable history of coal mine safety and health violations. According to MESA inspection records, since 1970, this mine was ordered closed 110 times—39 times for imminent danger conditions. During this same period, MESA also issued 855 notices of coal mine safety and health violations against the Scotia Company. (see chart A)

According to a staff study prepared by the Senate Subcommittee on Labor, during the period January 1974 and February 1976, the Scotia mine was charged with 420 safety and health violations. The Senate study indicated that at least 63 of the 420 violations were directly related to ventilation and methane conditions. (see chart B)

In addition to its general history of safety and health violations, another critical aspect of Scotia's safety record was the complete lack of an adequate safety education and training program. Testimony presented by Scotia miners, Company officials and MESA professionals clearly indicated that Scotia's training and education program was a "sham." According to the testimony, training in the use of self-rescuers was sporadic, and fire and mine evacuation drills were nearly non-existent.

In terms of the March 9 and March 11 explosions, the issues most directly related to Scotia's safety record include (1) the history of ventilation and methane problems, and (2) the lack of adequate safety education and training programs.

I. VENTILATION AND METHANE GAS AT THE SCOTIA MINE

When high enough concentrations of methane gas (5 to 15 percent) in an underground coal mine are associated with inadequate ventilation and an ignition source, a violent coal mine explosion is very likely to occur. In the opinion of all those associated with the Scotia mine

disaster, these three conditions apparently led to the explosions on March 9 and March 11.

In terms of methane gas, it is an accepted fact that the Scotia mine was the most gassy mine in Eastern Kentucky. However, as compared to other mines in other states, most notably in Virginia, the Scotia mine was not considered as heavily gassy. The Scotia mine, according to MESA, liberated an average of 250,000 to 500,000 cubic feet of methane gas in a 24-hour period. The aggregate amount of methane liberated, however, is relatively unimportant if proper and adequate ventilation exists to keep the methane concentrations below the ignition level.

Among the many legal provisions designed to guard against methane explosions, MESA regulations require tests for methane at the start of each shift and at each working place by qualified individuals. If 1.0 percent or more of methane is detected, electrical equipment must not be taken into, started or operated at the working place. Examinations and monitoring for methane are also required at 20 minute intervals during the operation of electrical equipment. In addition, the regulations require a pre-shift examination for accumulations of methane within three hours preceding the beginning of any shift, and before any miner in such a shift enters the active workings of a coal mine. If 1.5 percent methane is detected at any time, all miners must be withdrawn from the endangered area.

With respect to the Scotia mine the following facts are known:

- High concentrations of methane gas had previously been detected by the MESA inspectors and Scotia company officials;
- Pre-shift examinations were not always conducted in accordance with the law;
- Methane monitoring at the required 20 minute intervals was not always complied with; and
- Federal ventilation requirements were frequently violated.

Methane concentrations.—In terms of high concentrations of methane detected at the Scotia Mine, MESA inspection records indicate that on at least seven separate occasions between January 1974 and February 1976, MESA issued violation notices of high methane concentrations. On at least two separate occasions—November 18, 1974 and January 7, 1975—the Scotia mine was ordered closed because high concentrations of methane were found by the MESA inspector. The January 7, 1975 closure order indicated that an imminent danger condition existed due to a combination of 1.2 percent methane and inadequate ventilation. (see chart C)

In addition to the methane violations found by MESA, Charles Fields—third-shift fire boss at the Scotia mine—testified before a MESA investigation panel that on a number of occasions he detected excessive concentrations of methane gas throughout the mine. During the MESA hearings Fields was asked:

How often did you find more than say two percent of methane in work areas or idle areas?

FIELDS. Well sometimes it will be a long time. And maybe you will find not over two-tenths. And then sometimes you will get it where it will be *nine percent or three percent*. (Emphasis added.)

At the same hearing, Fields also testified that he had been aware of a methane gas feeder located in the same section of the mine where

the two explosions occurred (2 Southeast main). Fields said he measured at least a five percent methane concentration at the floor of the mine where the feeder was located. According to Fields, the concentration could have been higher but his methane monitor measured only up to a five percent level. Fields further testified that when he took the same reading at a level somewhat above the mine floor, "it showed nothing".

Besides Fields, other miners also testified to the existence of a methane gas feeder in the 2 Southeast main section of the mine. Pat Pate, a shuttlecar operator, told the MESA panel that whenever the mine floor was wet in the 2 Southeast main section, methane gas could be seen bubbling up through the water. According to Pate, "it boiled just like boiling water on a hot plate." Others who testified that they knew about the gas feeder included Arvil Cornett—Scotia mine foreman, James Maggard—second shift maintenance foreman, Fred Maggard—general superintendent of the Scotia mine, Harvey Creech—Scotia staff foreman, and Ernest Collins—a Scotia miner.

Preshift mine examinations.—With respect to the pre-shift mine examinations (fire bossing) required by the law, the MESA hearings clearly established that the examinations were not regularly made in all working sections of the Scotia mine.

The MESA panel established that Scotia's only third-shift fire boss, Charles Fields, signed the fire boss book indicating that such examinations had been conducted, even though many times he actually did not make the inspections. According to the transcript of the MESA hearings:

Question. This (the fire boss book) begins on March 5, and those are the records of the pre-shift examinations that were signed for by Mr. Fields prior to the explosion. Those are your signatures at the bottom of this particular page? You agree they are copies of the fire boss book?

FIELDS. Yes, sir.

Question. And you signed for the exams?

FIELDS. Yes.

Question. But you did not make them (the examinations)?

FIELDS. No.

During this exchange, Robert Barrett, MESA administrator, also established the fact that Fields very infrequently fire bossed the 2 Southeast main section of the mine where the explosions occurred. According to the transcript:

BARRETT. Were you in 2 Southeast Mains after the (continuous) miner pulled out of that section of the mine where the explosions occurred?

FIELDS. Yes.

BARRETT. How often did you get up there?

FIELDS. Well, not very often.

BARRETT. There were approximately six weeks between . . . the time the equipment was pulled out of the Mains and moved into 2 left . . . How many times would you say during that five or six week period were you up the mains?

FIELDS. Really I was up in there I would say twice.

Fields also testified that he had not fire bossed the 2 Southeast main section of the mine immediately prior to the shift in which the March 9th explosion occurred.

The Fields testimony indicated that he and Arvil Cornett, Scotia mine foreman, had an arrangement whereby they shared the fire bossing duties. Cornett's testimony confirmed this arrangement but it also confirmed that no one fire bossed the 2 Southeast main section

of the mine immediately prior to the shift in which the first explosion occurred.

The Fields-Cornett testimony demonstrated that there was no set pattern for dividing up the fire bossing responsibilities between them. This led to apparent confusion and a failure on occasion to cover the whole mine.

The 20-minute methane monitoring rule.—There is evidence in the record to suggest that the 20-minute methane monitoring rule was repeatedly violated at the Scotia mine. On at least one occasion (July 8, 1975) Scotia was cited by a MESA inspector for failure to test for methane at the required 20-minute intervals. Furthermore, testimony taken from Scotia miners indicated that the 20-minute rule was seldom followed. According to Carlos Smith, a Scotia continuous miner operator, this requirement was repeatedly violated. According to the MESA hearing transcript:

Question. Are you aware of a requirement that gas has to be checked periodically?

SMITH. Yes, sir.

Question. Do you know how often that is?

SMITH. Every twenty minutes, I believe.

Question. Would you say that gas was being tested for every twenty minutes?

SMITH. No, sir.

Smith also testified that while he was not qualified to test for methane gas, he nonetheless regularly made such tests at the miner which he operated. Additionally he stated that while the section foreman was supposed to test for methane at the miner, he, Smith, was "not sure" how often the tests were made. Smith did state that the tests were very seldom taken while he was operating his equipment.

Ventilation history

The safety history of the Scotia mine demonstrates serious and repeated ventilation violations, problems and illegal practices. In the two year period preceding the disaster, the Scotia mine had been cited 63 separate times by MESA for ventilation violations. Of this total, 26 violations were attributed to not enough air reaching the working face of the mine, and 18 violations were for failure to follow the MESA approved ventilation plan. Other ventilation violations included line brattices being out of position, inoperative methane monitors, high methane concentrations, permanent brattices unconstructed, lost coal and coal dust, and fans and other equipment not properly equipped or operating.

In addition to the history of MESA-cited ventilation violations, there is evidence indicating that MESA inspectors were intentionally misled as to the ventilation in the mine, and that air was regularly diverted from one section of the mine to another during MESA inspections.

At the Joint House and Senate committee hearings, Ronald Ledford, a former Scotia miner, testified that he personally witnessed air being diverted from one section of the mine to another in anticipation of a MESA inspection. Under questioning by Chairman Carl Perkins, Ledford said that he had accompanied James Bentley, assistant mine foreman for ventilation at Scotia, on three occasions when air was diverted. According to Ledford, —

We would go to the (air) regulators, and whatever section he (the MESA inspector) was coming on, he (Bentley) would kind of slide the doors closed over another section, and they would put more air into another section—the section that the inspector would come in—for more air, and (then) they would shut it down.

According to the hearing transcript:

PERKINS. You mean they would switch the air around?

LEDFORD. Right.

PERKINS. How often did they do this?

LEDFORD. I went with him (Bentley) three times when he done it.

PERKINS. Over what period of time did this take place?

LEDFORD. Back in about seven or eight months.

A number of other Scotia miners gave testimony which essentially substantiated Ledford's assertions. Furthermore, they also testified that they personally were involved in instances where MESA inspectors were intentionally misled as to ventilation and other safety conditions in the mine. Taken as a whole, the testimony of Gary Smith—a utility man, Carlos Smith—a continuous miner operator, Merle Rhodes—assistant second-shift foreman, Glen Sturgill—former Scotia miner, Everett Boggs—former Scotia miner, and Pat Pate—shuttle car operator, presented a ringing indictment of the manner in which the air in the mine was diverted, and inspectors misled.

II. SCOTIA'S SAFETY EDUCATION AND TRAINING RECORD

Robert Barrett, MESA Administrator, testified before the joint House and Senate Committee that MESA's investigation "clearly revealed that the Company's training program at Scotia was a sham." Nothing more tragically demonstrates Scotia's sham program than the fact that six of the miners who died on March 9th probably could have saved themselves had they received proper training in fire drill techniques and evacuation procedures. These six men did not die as a result of the initial explosion, but suffocated to death when their self-rescuers became inoperative. Following the initial explosion, the six apparently barricaded themselves in the 2 Left panel, off 2 South-east main and sat there until they died.

MESA and state officials reportedly said that the six miners who suffocated might have survived had they simply tried to walk out of the mine following the explosion. According to Harreld Kirkpatrick, Commissioner of the Kentucky Department of Mines and Minerals, "We feel that the self-rescuers, with what we know now, they (the six miners) could have walked out 3½ miles in an hour" (the self-rescuers were good for about an hour). In testimony before the Joint House-Senate Committee, Monroe West, Subdistrict manager of MESA's Norton, Ky. office, said, "Sir, if they (the six miners) attempted to come out of there (the mine) there is a good possibility that they could have made it." MESA Administrator Robert Barrett, at a congressional briefing on March 15, 1976, also expressed the opinion that the six men probably could have saved themselves by walking out of the mine.

However tragic this example of six dead men might appear, their failure to act should not be surprising in light of Scotia's record on safety education, particularly with respect to fire and evacuation drills. Testimony taken from Scotia miners and officials clearly

established the lack of an overall, adequate safety education program at the mine.

With respect to fire drills, escapeway procedures, and disaster-type situations, the hearing record is replete with evidence that most of the miners had never received proper training and instruction. Fred Maggard, the General Manager of the Scotia mine, told the MESA investigation panel that he did not know when the last fire drill had been conducted. His testimony indicated that he knew very little with respect to anything related to training and education. Maggard said that all safety training and education activities were the responsibility of the Company's safety personnel.

Charles Kirk—the *only* safety man employed by the Scotia coal company—testified that to the best of his knowledge not one fire or evacuation drill had been conducted at the mine during his tenure as the Company's safety inspector, approximately 3½ years. He further testified that he was the only Company safety inspector and was responsible for all three of Scotia's mines including Scotia No. 1 where the disaster occurred. Kirk stated that he had not been in the Scotia No. 1 mine during the 3-month period prior to the disaster.

Richard Combs, general Scotia mine foreman, told the MESA panel that while he was aware that evacuation drills were required, he was not familiar with the federal regulations as such.

David McKnight, President of the Scotia Employees Association, in response to questioning from Chairman Carl Perkins told the Joint House-Senate investigation committee that "I have never known of a fire drill" and "as far as escapeways, sir, nothing about escapeways. I could go into those mines and never get out myself." Others who testified concerning the lack of safety training and fire and evacuation drills included Roger McKnight, Jasper Cornett, Carlos Smith, Glen Sturgill, and Everett Boggs.

MESA'S ENFORCEMENT EFFORTS AT THE SCOTIA MINE

In terms of effectiveness MESA's enforcement efforts relative to the Scotia coal mine leaves much to be desired. Nothing more clearly demonstrates this ineffectiveness than the tragic fact that on March 9 and March 11, 1976, the Scotia mine exploded killing 26 men. MESA's enforcement shortcomings with respect to this mine have been inadvertently admitted by the Agency. According to MESA Administrator, Robert Barrett, "prior to the explosions, federal inspectors had spent more than 1,000 man-days inspecting the Scotia mine, issuing 855 notices of violations and 110 closure orders." Other MESA officials have testified that the Scotia mine was the most inspected mine in Eastern Kentucky. The question thus arises, why, after all the MESA inspection activity, notices and closure orders, did the Scotia mine continue to operate as an unsafe and dangerous mine?

The answer, is that the Scotia Coal Company was essentially permitted to ignore the law. We are convinced that MESA failed to adequately use its authority to properly enforce the Coal Mine Health and Safety Act at the Scotia mine.

Our investigation of MESA's enforcement efforts at the Scotia mine has raised a number of serious policy questions including:

1. MESA's policy governing the concept of imminent danger under Section 104(a) of the Coal Mine Health and Safety Act;

2. MESA's policy governing mine closure orders particularly with respect to Section 104(c) of the Coal Mine Health and Safety Act (unwarrantable failure to comply);

3. MESA's policy governing its Section 109(b) authority under the Coal Mine Health and Safety Act (criminal penalties);

4. MESA's policy governing the assessment and collection of monetary penalties for coal mine health and safety violations;

5. MESA's policy governing coal mine safety and health inspections and procedures.

I. MESA'S POLICY GOVERNING THE CONCEPT OF IMMINENT DANGER:

Section 104(a) of the Coal Mine Health and Safety Act states:

If, upon any inspection of a coal mine, an authorized representative of the Secretary finds that an imminent danger exists, such representative shall determine the area throughout which such danger exists, and thereupon shall issue forthwith an order requiring the operator of the mine or his agent to cause immediately all persons (except certain selected individuals) to be withdrawn from, and to be prohibited from entering, such area until an authorized representative of the Secretary determines that such imminent danger no longer exists.

The Act defines imminent danger as "the existence of any condition or practice in a coal mine which could reasonably be expected to cause death or serious physical harm before such condition or practice can be abated."

Throughout this investigation, MESA officials have been repeatedly asked the question, "Why—given the mine's history of ventilation violations and methane concentrations—was the Scotia mine permitted to operate?" The specific policy question which has arisen is whether—based upon a mine's prior history of coal mine health and safety violations—the operation of a mine, could of itself be considered as imminently dangerous and therefore ordered closed until chronic safety and health problems are permanently abated?

MESA officials have testified that in their view the Agency does not have the authority, under the Act, to use Section 104(a) in the above manner. *However, they have also testified that MESA has not sought to test the concept in the federal courts.* According to MESA Administrator Robert Barrett, "A question has been asked as to why MESA failed to close the Scotia mine permanently on the theory that its rate of methane liberation constitutes all by itself an imminent danger . . . The answer to that question is that, *in our view*, there is no authority under the Federal Coal Mine Health and Safety Act of 1969 to take that kind of action as long as the mine is properly ventilated." (emphasis added) Robert Long, MESA's Associate Solicitor, summarized MESA's policy in this respect when he stated to Mr. Perkins, "Each violation gets assessed separately . . . That's the way this law is written . . . Once that violation is abated, that notice or order, as the case may be, has to be lifted . . . If you want to look at the record and say there are sixteen notices of violation or sixteen orders and those sixteen comprise in themselves imminent danger, I don't think that's what this law provides as it is written today." According to the hearing (June 16, 1976) transcript:

PERKINS. A situation like that exists and you come here complaining that no imminent danger exists, it is beyond my comprehension.

LONG. I did not claim no imminent danger existed. There were quite a few imminent danger orders on this mine. *What I said was that a sum total of those orders does not, in and of itself, compromise imminent danger.* (Emphasis added.)

PERKINS. Have you ever tested in the courts whether a string of violations that you talk about constituted the danger?

LONG. No, sir.

PERKINS. Why haven't you?

LONG. Because *I don't believe* that that is what this law provides and *I don't think* the Justice Department agrees either. (Emphasis added.)

MESA officials have further testified that they need additional mine closure authority to deal with mines like Scotia. While this may be, it is our position that MESA has not fully tested the authority that it already has under Section 104(a) of the Act. It is not enough to simply state that "in our view" or "I don't believe" that the Act contains the necessary authority to apply the imminent danger closure provision to a mine with chronic safety and health violations. The Scotia mine is a primary example of where MESA should have tested, in the courts, its 104(a) authority. Only after testing such authority, and receiving an adverse definitive ruling, do we believe that MESA should come to the Congress and ask for additional authority. The Interior Department has had six years to address this question in the courts and it has thus far failed to do so. We believe that this is a serious policy shortcoming on the part of the Administration.

II. MESA'S POLICY GOVERNING MINE CLOSURES

Of all the enforcement tools contained in the Coal Mine Health and Safety Act of 1969, perhaps the most potent are those relating to the Federal Government's authority to effectively close a mine by issuing orders for the withdrawal of the miners. The issuance of such orders can severely interrupt coal production and thereby impact directly on the business of a coal company. This is compared to federal fines for health and safety violations which, for the most part, are considered by the companies as an integral part of doing business. As will be discussed later in this report, the fines levied by MESA against Scotia were at best a nuisance and had no lasting impact on the Company's safety and health policies. If properly used, however, closure orders can have a substantial effect on the ability of a company to conduct its business and therefore constitutes an impressive tool to effectively enforce mine health and safety.

Unfortunately for the 26 Scotia miners who died in the March 9 and March 11 explosions, MESA failed to adequately use its mine closure authority to effectively impress upon Scotia's management the severity of the mine's safety and health problems. MESA's record in this respect leaves much to be desired, particularly in terms of the inadequate use of its Section 104(c) authority, which is perhaps the most effective mine closure tool for controlling the day to day operations of a mine like Scotia. As will be discussed more fully below, Section 104(c) essentially provides for the closure of a mine where there are unwarrantable failures on the part of an operator to comply with the federal health and safety standards.

MESA's Mine Closure Authority.—The Coal Mine Health and Safety Act of 1969, provides MESA with the authority, under certain circumstances, to effectively close coal mines by issuing orders for the

withdrawal of miners. The act provides for the following types of mine closure orders:

Imminent Danger.—Section 104(a) provides that if an authorized representative of the Secretary of the Interior (MESA) finds that an imminent danger exists in a coal mine he shall forthwith issue an order requiring all persons to be withdrawn immediately from the mine, or affected mine area, until such time that the representative determines that the imminent danger no longer exists.

Failure to Abate.—Section 104(b) provides that whereupon any inspection of a coal mine by an authorized representative of the Secretary finds that there has been a violation of a federal health or safety standard which has not created an imminent danger, the representative shall issue a notice of violation fixing a reasonable time period for its abatement. If the violation has not been abated in the specified time period or possible extension thereof, then the representative shall issue a withdrawal order with respect to those miners affected by the violation. The withdrawal order shall remain effective until such time that it is determined that the violation has been abated.

Unwarrantable Failure to Comply.—Section 104(c) provides for two types of withdrawal orders. Under Section 104(c)(1) if an authorized representative of the Secretary finds a violation of a health or safety standard which does not pose an imminent danger, but which could cause a mine safety or health hazard, and if he finds that the violation resulted from the unwarrantable failure of the mine operator to comply with the standards, then the inspector shall issue a notice to this effect. If during the same inspection, or any subsequent inspection within 90 days, the inspector finds another violation which resulted from the unwarrantable failure to comply, he is required to issue a withdrawal order. The order remains in effect until such time as the violation is abated.

Section 104(c)(2) provides that once a withdrawal order under 104(c)(1) has been issued, additional such orders shall be issued if, upon any subsequent inspection, violations are found similar to those for which the initial 104(c)(1) order was issued. This order shall remain in effect until such time as an inspection determines the absence of any such similar violations. Following an inspection which determines that no similar violations exist, the provisions of 104(c)(1) are again applicable. According to the legislative history of the Coal Mine Health and Safety Act, Congress defined "unwarrantable failure of the operator to comply" to mean "the failure of an operator to abate a violation because of a lack of due diligence, or because of indifference or lack of reasonable care, on the operator's part."

Mine Control Following an Accident.—Section 103(f) provides that a federal inspector may issue withdrawal orders following a mine accident to insure the safety of any person in the mine.

Except for the imminent danger closure authority, which, under current MESA policy, is applicable only in limited circumstances—the unwarrantable failure provision is the most effective closure tool in controlling the day to day operations of a mine like Scotia, with a

demonstrated history of chronic mine safety and health violations. A close reading of the legislative history of the Coal Mine Health and Safety Act indicates that Congress designed Section 104(c) precisely for mines like Scotia whose operators repeatedly demonstrated a lack of "due diligence," "indifference" and "lack of reasonable care." Having once determined the existence of such an attitude—which the record indicates was rampant at Scotia—MESA could and should have used its Section 104(c) closure authority to the utmost. The fact that the Scotia mine was essentially permitted to continue to operate in an unsafe and dangerous manner is an indictment of MESA's effectiveness with respect to the use of its mine closure authority.

MESA's Mine Closure Record at the Scotia Mine.—According to MESA records, during the period May 13, 1970 to March 9, 1976, 855 notices of safety and health violations were issued to Scotia. In addition, the Scotia mine was ordered closed 110 times during this period. At the very least, therefore, Scotia was found to have violated the Coal Mine Health and Safety Act some 965 times prior to the March 1976 disaster. As already determined elsewhere in this report, Scotia repeatedly deceived MESA inspectors with respect to safety and health problems in the mine. Thus, it can be assumed that there were many more instances of violations that were never uncovered by MESA.

The number of closure orders issued by MESA against Scotia are somewhat deceiving since in almost every case the closure order was lifted the same day it was issued. Given Scotia's continued "MESA be damned" attitude, it must be assumed that MESA's closure orders had a minimal effect on proper mine safety and health at the Scotia mine.

Even when dealing with the Scotia numbers, MESA's mine closure record is inadequate. Of the 110 closure orders issued, 39 were for imminent danger, 23 were for failure to abate in time, 46 were for unwarrantable failure to comply, and 2 were for accidents. In terms of ventilation and methane conditions at the Scotia mine, MESA issued a total of 149 notices of violations but only 23 closure orders; 3 for imminent danger, 2 for failure to abate, and 18 for unwarrantable failure to comply. In almost every case the ventilation closure order was terminated by MESA the same day it was issued.

Given Scotia's history, it is inconceivable that the mine was only ordered closed 23 times for repeated ventilation violations, particularly in view of MESA's authority to close the mine for unwarrantable failure to comply with the federal ventilation standards. During the 15-month period immediately prior to the March 9 disaster, Scotia was found to have violated the ventilation standards some 33 separate times, but only 4 Section 104(c) closure orders were issued, all of which were terminated by MESA the same day they were issued. As far as we are concerned this demonstrates an unwarrantable failure on the part of MESA to use its authority to adequately enforce the law.

To illustrate MESA's casual policy governing closure orders at the Scotia mine, the following case history is instructive. We have selected the 15-month period prior to the disaster to demonstrate MESA's enforcement activities with respect to Part 75.301 of MESA's Ventilation Standards: "Not enough air reaching the face of the mine".

On January 27, 1975 MESA issued a *104(c)(2) closure order* for a 75.301 violation; the order was lifted that same day;

On January 30, 1975 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On February 25, 1975 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On March 13, 1975 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On March 19, 1975 MESA issued a *104(c)(2) closure order* for a 75.301 violation; the order was terminated the same day;

On April 24, 1975 MESA issued a *104(c)(2) closure order* for a 75.301 violation; the order was terminated the same day;

On May 27, 1975 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On July 10, 1975 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On July 28, 1975 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On August 25, 1975 MESA issued a *notice* for a 75.301 violation which was terminated on August 27, 1975;

On September 17, 1975 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On September 29, 1975 MESA issued a *notice* for a 75.301 violation which was terminated on the same day;

On January 13, 1976 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On January 20, 1976 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On January 29, 1976 MESA issued a *notice* for a 75.301 violation which was terminated the same day;

On March 8, 1976, the day before the mine exploded, MESA issued *two notices* for two 75.301 violations, which were terminated that same day.

This 15-month record of MESA enforcement efforts with respect to Part 75.301 clearly indicated that there was something chronically wrong with Scotia's ventilation system. On sixteen different occasions MESA found that there was insufficient air reaching the working faces of the mine, yet only three 104(c) closure orders were issued for unwarrantable failure to comply with Part 75.301. In all three cases the closure order was terminated by MESA the same day it was issued.

The question confronting MESA is why did the agency not use its closure authority, particularly its Section 104(c) powers, to effectively interrupt the production of coal at the Scotia mine until such time that the Company made fundamental changes in its safety and health attitudes and policies? Thus far, MESA has not produced an adequate and acceptable answer to this question. What is known, however, is that MESA's mine closure policy at the Scotia mine was not sufficient enough to impress upon the Company the full measure and force of the law. The Scotia management apparently found that it was more profitable to operate the mine in violation of the law than to make the changes necessary for compliance.

III. MESA'S POLICY GOVERNING CRIMINAL SANCTIONS

In addition to its mine closure authority, MESA has the power to seek criminal sanctions against operators who knowingly and willfully violate the Coal Mine Health and Safety Act. According to Section 109(b) criminal charges can be brought against "any operator who willfully violates a mandatory health or safety standard, or knowingly violates or fails to comply with any order issued under Section 104 . . ."

Throughout its entire history of enforcement at the Scotia mine, MESA never once sought to bring criminal actions against the Company. We believe that Scotia's record of violations, spanning a six year period, constitutes, at the very least, knowing and willful violations of mandatory health and safety standards. Whether a court would agree is not now in issue. The simple fact is that MESA never sought to bring criminal charges against the Scotia company whose record, on its face, should have been enough to spur MESA to file such charges.

Why did MESA fail to use its criminal sanction authority with respect to the Scotia mine? Part of the answer has to do with MESA's overall policy governing Section 109 (b) and (c). According to Senator Harrison Williams, the following constitutes MESA's overall criminal sanctions record from mid-1974 to date:

- 342 requests from the field to investigate possible criminal violations;
- 238 cases have been assigned for criminal investigation;
- 117 criminal investigations have been completed;
- 38 cases were recommended from the field for criminal or civil action;
- 17 cases have been forwarded to the Interior Department Solicitor's office for action. Of the 17 cases forwarded to Interior's Solicitor, 5 recommended criminal action.

This rather dull record was further substantiated when assistant MESA administrator John Crawford told Senator Williams "To answer your question, we have looked at three hundred some cases . . . Again, I am not a lawyer, but somewhere in there we have only arrived at a very few out of those that apparently are strong enough to carry through for prosecution."

Thus far, MESA has not adequately defined the criteria used for deciding when to pursue Section 109(b) or (c) actions, but the law appears to be clear. The tests, according to the law, are willfully violating a mandatory standard or knowingly violating or failing to comply with an order, particularly a Section 104 order.

In terms of the Scotia mine, there is strong evidence to suggest that local MESA officials were aware of willful violations and knowing failures to comply with orders. This evidence also suggests that because of MESA's cumbersome investigative procedures, very little was done to pursue criminal sanctions against Scotia. In an exchange between Senator Williams, Chairman Perkins, and Lawrence Phillips, MESA's District Manager of the Pikeville Kentucky Office—with jurisdiction over the Scotia mine—it was brought out that criminal sanctions against the Scotia mine had been recommended. According to the hearing transcript.

WILLIAMS. Have you ever considered recommending these severe (criminal) penalties if you couldn't get to the bottom of unsafe conditions in that (Scotia) mine?

PHILLIPS. Yes, on specific instances I have. We review every "C" (Section 104 (c)) type action in the district and every order. The inspector who wrote the action along with his supervisor, first make the determination whether or not they think it is willful. It passes on to a man in the district who we call a special investigator who has some training along those lines. If he considers it willful, it comes to me and I read it. If I also agree with him, I forward it to Mr. Crawford's office.

PERKINS (later in the dialogue). The willful penalty statute that Senator Williams was referring to is in there, and it was not applied?

PHILLIPS. I can't say it wasn't applied. We had recommended in certain instances for willful provisions to apply.

PERKINS. To this particular mine?

PHILLIPS. Yes Sir.

PERKINS. What happened? Why didn't it stop?

PHILLIPS. These are presently being investigated.

PERKINS (later in the dialogue). Getting back to the willful penalty section, Mr. Phillips, you stated that some recommendations were made. Who made the recommendations, and when were they made? Before or after the disaster?

PHILLIPS. I made the recommendations and I made them before (the disaster).

PERKINS. How long before?

PHILLIPS. I made one two weeks after I got there. September 17, 1975.

PERKINS. You never heard any outcome from that recommendation? Never got any reply back?

PHILLIPS. It is being investigated. None other than that.

PERKINS. None other than it was being investigated? Who was supposed to make that investigation after you made your recommendation?

PHILLIPS. Mr. Crawford has on his staff the people who evaluate this, and I really don't know what all is involved, but then it comes back to the special investigator who is in my district, to run all the facts in the case.

PERKINS. Did it ever come back to the special investigator in your district to run up the recommendations you had made in September of last year?

PHILLIPS. Yes sir.

PERKINS. What was his decision?

PHILLIPS. He has not completed the investigation at this time.

PERKINS. He has not completed the investigation at this time?

PHILLIPS. Yes.

PERKINS. And you made the recommendation last September, is that right?

PHILLIPS. Yes.

PERKINS. Of willful violations?

PHILLIPS. Yes sir.

PERKINS. (later in dialogue). I want to know what in your opinion constitutes willful violations?

PHILLIPS. That is a pretty tough question. To me it would almost be akin to wanton neglect.

PERKINS. Do you feel that there was wanton neglect there at that (Scotia) mine and was that the reason that you made those recommendations?

PHILLIPS. In certain instances I do, yes.

From this record, it is rather obvious that the MESA officials directly responsible for the Scotia mine believed that the mine was being operated in a manner which willfully violated MESA's standards, yet no criminal action was taken against the Company. From September 1975 until now all that has been done was to investigate. The recommendation for willful violation sanctions was made five months prior to the disaster but, as far as Scotia was concerned, no action was taken. At the very least MESA should be called to task for a bureaucratic procedure which slows the criminal sanction process to something less than a snail's pace. At worst, MESA's record on criminal sanctions, particularly in terms of the Scotia mine, indicates an institutional policy designed to thwart the intent of the law. Whatever the case, MESA absolutely failed to use one of its most potent enforcement weapons on a mine which amply demonstrated a willful and "wanton neglect" of federal coal mine health and safety standards.

IV. MESA'S POLICY GOVERNING THE ASSESSMENT AND COLLECTION OF MONETARY PENALTIES

In addition to its mine closure and criminal sanction authority, MESA has the power to assess and collect monetary penalties for violations of coal mine health and safety standards. While this authority is not as potent as closing a mine or bringing criminal charges, it can, if properly used, serve as an effective enforcement tool.

With respect to the Scotia mine, it has been concluded that MESA's use of its monetary penalty powers was totally ineffective in bringing about compliance with the federal standards. A review of the record clearly indicates that the penalty amounts assessed by MESA against Scotia for violations were low to begin with, and the fines actually collected were substantially lower. Given Scotia's continued and repeated violations, it can be assumed that the Company viewed the MESA fines merely as nuisances, with little or no lasting impact on the Company's safety and health attitudes or policies. Scotia apparently found it cheaper to pay the fines than to comply with the law. MESA's efforts in this regard must be regarded as nothing more than a "slap on the hand."

MESA's authority

Section 109(a)(1) of the Coal Mine Health and Safety Act provides that an operator of a coal mine in which a violation of a mandatory standard occurs shall be assessed a civil penalty of up to \$10,000 per violation. According to the Act, "In determining the amount of the penalty, the Secretary of Interior shall consider the operator's history of previous violations, the appropriateness of such penalty to the size of the business of the operator charged, whether the operator was negligent, the effect on the operator's ability to continue in business, the gravity of the violation, and the demonstrated good faith of the operator charged in attempting to achieve rapid compliance after notification of a violation."

Of all the criteria spelled out for determining the amount of the penalty, Congress intended the negligence factor to be pre-eminent. According to the House-Senate Conference Report which accompanied the Act, "The Secretary shall apply the more appropriate negligence test in determining the amount of the penalty, recognizing that the operator has a high degree of care to insure the health and safety of persons in the mine."

MESA monetary penalty record for the Scotia Mine

According to MESA, about \$78,000 in fines have been collected from Scotia during the period from May 1970 to March 1976. While on its face this figure might appear impressive, it represents only a fraction of the total fines assessed against the Company. In many cases, the amount actually collected from Scotia was as much as 50% less than the amount initially assessed.

A more appropriate way of analyzing MESA's monetary penalty record is to examine the specific Scotia figures. For example, the highest penalty assessed against Scotia for a ventilation violation during the period January 1974 to June 1975 (the latest figures available) was \$582, assessed on 4/18/75 for a Part 75.301 violation, "not enough air reaching the working face of the mine." The amount

actually collected for this violation was \$291, or a 50% reduction. As a matter of fact, this \$291 was the largest amount ever paid by Scotia for a ventilation violation during the January 1974-June 1975 period.

As for other types of violations, the following represents the highest penalties assessed and collected from Scotia during the 1974-1975 period:

- Electrical equipment: highest assessed penalty \$364; highest collected penalty \$190; a reduction of almost 50 percent;
- Combustible Materials and Rock Dusting: highest assessed penalty \$1746; highest collected penalty \$873; a reduction of 50 percent;
- Fire Protection: highest assessed penalty \$436; highest collected penalty \$275; a reduction of almost 40 percent;
- Dust Standards: highest assessed penalty \$218; highest collected penalty \$102; a reduction of more than 50 percent;
- Trailing Cables and Grounding: highest assessed penalty \$582; highest collected penalty \$291; a reduction of 50 percent;
- Roof Support: highest assessed penalty \$1164; highest collected penalty \$582; a reduction of 50 percent;
- Surface Work Areas: highest assessed penalty \$436; highest collected penalty \$400; a reduction of less than 10 percent;
- Maps, Hoistings and Mantrips: highest assessed penalty \$73; highest collected penalty \$50; a reduction of some 30 percent;
- Miscellaneous: highest assessed penalty \$220; highest collected penalty \$220; no reduction.

To further illustrate MESA's low assessment and even lower collection rates, the following is instructive with respect to ventilation violations at the Scotia mine:

- Jan.-Mar., 1974: average assessed penalty \$296; average collected penalty \$144;
- April-June, 1974: average assessed penalty \$288; average collected penalty \$167;
- July-Sept., 1974: average assessed penalty \$159; average collected penalty \$140;
- Oct.-Dec., 1974: average assessed penalty \$140; average collected penalty \$100.
- Jan.-Mar., 1975: average assessed penalty \$222; average collected penalty \$140;
- April-June, 1975: Average assessed penalty \$134; average collected penalty \$98.

(NOTE.—These figures were compiled by the Senate Subcommittee on Labor with the assistance of the General Accounting Office.)

Another factor inhibiting effective enforcement at Scotia was the time lag from the date of a violation to the date of assessment, and from the date of violation to the date of collection. For ventilation violations at the Scotia mine, during the period January 1974-February 1976, this lag averaged 198 days from the violation to the assessment date, and 270 days from the violation to the collection date. In other words, for ventilation violations at the Scotia mine it took an average of almost nine months from the time a violation was found until the time the assessed penalty—reduced in some cases by as much as 50 percent—was actually collected.

It should be noted here that over the course of its enforcement efforts at the Scotia mine MESA has, on three separate occasions, assessed the maximum civil penalty of \$10,000. Two of the three cases involved fatalities and the other involved serious physical injuries. All three accidents occurred prior to the March 9 and March 11, 1976 explosions. In one of the fatality cases, Scotia settled out of court and paid a fine of \$5,500. The other two \$10,000 penalty assessment cases are pending.

MESA's attitude towards penalties

In reviewing MESA's record on monetary penalties against the Scotia mine, it appears that, at the very least, MESA did not apply the criteria spelled out in the law for determining penalty amounts. While it is true that an affected operator has the right to appeal an assessed penalty to the Secretary of the Interior and ultimately to the courts, it is equally true that the law places upon the Secretary the responsibility for applying certain criteria for determining the amount of the penalty.

As indicated above, the law instructs the Secretary to make a determination based upon:

- the operator's previous history of violations;
- the size of the operator's business;
- the operator's negligence;
- the ability of the operator to remain in business;
- the gravity of the violation; and
- the demonstrated good faith of the operator to comply.

When compared to Scotia's history of violations and MESA's monetary penalty response to those violations, it is clear that MESA failed to apply these criteria. One would think that as Scotia built its record of repeated violations, MESA would have increased the fines for each succeeding violation. However, the available MESA records clearly indicate the reverse. The numbers available from January 1974 to June 1975, clearly indicate a trend towards reduced average penalty assessments and collections.

In other words, rather than increasing the penalties as the violations mounted—as the law implicitly instructs—MESA actually reduced or, at best, kept constant the size of the penalties during the period 1974–1975.

During the Joint House-Senate hearings, MESA and Interior Department officials were repeatedly questioned on MESA's penalty assessment and collection policies and efforts. These officials gave the panel no sound reason why the initial assessments for violations at the Scotia mine were low, given the mine's history of repeated violations. As a matter of fact, MESA Administrator Robert Barrett admitted to Representative Perkins that "they (the assessments) are too low . . . I will agree with that one hundred percent." As for the rather substantial reductions from the amount initially assessed to that ultimately collected, Robert Long, Associate Solicitor for MESA, sought to explain that the reductions, in general, resulted from the appeal process available under the law. However, Mr. Long did not explain the apparent pattern of reductions which, for the Scotia mine, approximate 50 percent in many cases. In terms of the long time lag from the finding of a violation to assessment and collection, Mr. Long also cited the various procedures involved in the appeal process.

From our review of MESA's policy governing monetary penalties, it is apparent that this policy failed and failed miserably as an effective enforcement tool with respect to the Scotia mine. In spite of all MESA's rationalizations and explanations, it is clear that the intent, if not the letter, of the law was insufficiently applied. Initial assessments for violations at the Scotia mine were low and were not commensurate with the mine's history of violations. Also, on the average, there appears to be a consistent pattern of an approximate 50 percent reduction in the amount collected as compared to the amount initially assessed. The time lag from violation to assessment and collection provided Scotia with little incentive to comply with the law. In addition, the only instances where MESA even attempted to bring the full civil penalty weight of the law to bear on Scotia, by assessing the maximum allowable penalty, involved two cases of fatalities and one case of serious physical injuries. Thus far, MESA has only collected a penalty in one of those fatality cases, the collected amount being some 45 percent less than the \$10,000 initially assessed.

From the facts at hand, it appears that MESA's attitude with respect to monetary penalties at the Scotia mine consisted of:

1. Only applying the maximum penalty in cases where deaths or serious physical injuries had already occurred;
2. In other cases only making those assessments which the agency thought it could collect;
3. In many, if not most, cases settling for something approximating 50 percent in actual dollars collected;
4. Being apparently content with a process which permits a long lag time from the date of violation to the date of assessment and collection.

V. MESA'S POLICY GOVERNING HEALTH AND SAFETY INSPECTIONS:

As previously stated in this report, MESA failed to adequately apply its mine closure, criminal sanctions, and monetary penalty authority to effectively enforce the Coal Mine Health and Safety Act at the Scotia mine. In addition, the Scotia case demonstrates serious shortcomings in MESA's inspection efforts and activities.

Even though the Scotia mine was the most inspected coal mine in Eastern Kentucky, MESA's inspection efforts at the mine had little impact on correcting Scotia's chronic health and safety problems. After some 1,000 man-days of inspection activity, the Scotia mine continued to repeatedly violate established federal health and safety standards.

Robert Barrett, MESA's Administrator, has testified to the effect that MESA's investigation into the Scotia disaster has, among other things, uncovered some serious shortcomings in MESA's inspection procedures and policies. According to Barrett, "We have learned many things from the nine days of hearings (conducted by MESA) about explosions, the Scotia and Blue Diamond Coal Companies, and *about the effectiveness and shortcomings of MESA.*" (emphasis added).

In an attempt to correct some of these "shortcomings", Barrett told the Joint House-Senate panel that, among other actions, MESA was moving immediately to:

- conduct frequent "blitz" inspections;
- conduct more detailed and careful reviews of ventilation and miner training plans

- promulgate mandatory education and training standards;
- implement a "mine" profile rating system";
- expand an on-going accident prevention program;
- computerize and speed-up the assessments of civil penalties;
- "beef-up" training of federal inspectors in areas of mine rescue and recovery work; and
- draft new standards requiring better emergency survival equipment and materials.

While the items of this list point out some of MESA's shortcomings and while they are all, no doubt, necessary, there are a few specific "inspection-related" issues which should be examined with respect to the Scotia experience. These include "blitz" inspections, review of ventilation plans, and "mine profile rating systems". In terms of MESA's inspection efforts at the Scotia mine, all three of these activities were either lacking or seriously inadequate. Rather than using the "blitz" inspection approach where the entire mine is inspected by a team of inspectors—particularly for ventilation and methane problems—MESA's most common type of Scotia inspections were one man, spot inspections. As for Scotia's ventilation plan, MESA's review and evaluation of it was, at best, sloppy. In terms of a profile of the safety history of the Scotia mine, such a profile was all but non-existent.

Spot inspections

MESA's most common health and safety inspection approach to the Scotia mine involved spot inspections designed to check on specific and limited conditions in a rather short period of time. Spot inspections are compared to what MESA calls "regular health and safety" inspections which are designed to examine the entire mine or major working portions thereof.

A review of MESA inspection records indicates that from May 1970 to February 1976, MESA conducted 225 spot inspections of the Scotia mine compared to only 23 "regular" inspections. During this period, MESA also conducted 113 special hazard inspections and 169 miscellaneous inspections. Prior to the March 9, 1976, explosion, the last "regular" MESA inspection of the Scotia mine occurred during an eight-week period in January-February 1976, about a month before the disaster.

In the opinion of some professionals, spot inspections have very little overall impact. Elton D. Rea, a highly respected, retired MESA inspector with considerable experience in gassy mines, told the joint House-Senate panel, "I am against spot inspections . . . all you are getting is numbers . . . It ought to be complete inspections . . . If you are going to make a complete inspection of that mine, it is all right to spot the mine in between time occasionally . . . So I just do not think that MESA is gaining anything by spot inspections outside a bunch of numbers to put on the books."

By definition, spot inspections are very limited in both scope and time. When conducting such inspections, MESA inspectors usually look for a specific mine condition and have only a few hours in which to complete the work. The result, unfortunately, is that an inspector very often will miss hazardous conditions which exist independent of those he is checking for, and also, his expertise may not be appropriate for recognizing other hazards. A case in point is Cecil Davis, the MESA inspector who conducted the inspection of the Scotia mine less than 24 hours prior to the March 9, 1976 explosion.

During the investigative hearings conducted by MESA, Davis—who is a respirable dust technician—was repeatedly questioned as to why he failed to notice the change in ventilation, and the lack of proper stoppings. According to the hearing transcript:

QUESTION. Well, let me ask you this again first. A check of the ventilation controls at the intersection (near where the explosion occurred), would that have been a normal part of your inspection that night (March 8th)?

DAVIS. No Sir.

QUESTION. And why would it not have been?

DAVIS. My instructions, you have really got a lot to do if you are evaluating respirable dust. And all the different aspects that go with this particular type of inspection. *We are instructed that the only thing that we are to be concerned with is the condition of the section in by the section loading point which is the tailpiece.* (emphasis added)

QUESTION. Are you saying that when you went up the track through the intersection into 2 Left and there was no curtain that . . . it would not have been part of your inspection to have considered the potential trouble spot up the Main?

DAVIS. *No sir. Any outby areas, that is not part of my inspection, any outby areas.* Now, I have instruction from my supervisor, Mr. Herman Lucas, if I have to spend more than one day on a particular section that I will examine the permissible equipment and go into some of the other aspects of coal mine inspections work, if I have to spend more than one day.

QUESTION. You say that your instructions as a technical specialist are that you don't look at anything outby the tailpiece in the working section?

DAVIS. This is our instructions.

QUESTION. But by the same token are you not a DAR (Duly Authorized Representative)?

DAVIS. Yes Sir.

QUESTION. Is not a DAR required to issue notices for every violation observed?

DAVIS. Yes Sir.

QUESTION. I just can't quite conceive of a concept that you close your eyes until you get into the tailpiece?

DAVIS. No Sir.

QUESTION. You can't rationalize that?

DAVIS. As I stated in my notes, I observed the roof condition and observed that areas appeared rock dusted, well rock dusted.

QUESTION. But I think that a check (air curtain) not being there, it should have been observed and it should have triggered a question in your mind as to how the straight was being ventilated?

DAVIS. Well, I hadn't examined any outby area.

From this exchange it is rather obvious that the Davis inspection was very limited in scope (respirable dust), time (a number of hours) and approach (Davis was only instructed to inspect a specific mine area). While Davis did cite the mine for two ventilation violations—not enough air reaching the mine's face—there were other ventilation problems that he either did not observe, or was not competent to recognize; "I am not a ventilation expert" Davis told the MESA panel. During the MESA hearings, Davis also stated, "As far as ventilation is concerned, the only part of the ventilation I am actually interested in is the dust supplement . . ."

There is nothing in the record which demonstrates that the Davis inspection was very much different from the other 225 spot inspections that MESA conducted in the Scotia mine. On only 23 separate occasions since 1970 was the mine subjected to an entire examination. Even in these instances of "regular" health and safety inspections only one, or perhaps two, MESA inspectors were used. As previously indicated, there is evidence in the record to indicate that Scotia personnel, rather routinely, engaged in deceptive practices with respect to one-man MESA inspections. While an inspector was check-

ing for adequate ventilation, for example, in one section of the mine, Scotia personnel were robbing air from another section to assure that the section being inspected was receiving adequate air supplies.

As for MESA Administrator Barrett's plans to conduct "blitz" inspections, we applaud his initiative. Unlike spot or, for that matter, "regular" health and safety inspections, we believe that the "blitz" approach, utilizing teams of MESA inspectors throughout an entire mine, will serve to make MESA inspections more meaningful and productive.

MESA's review and evaluation of Scotia's ventilation plans

One of the major issues involved in the Scotia disaster has to do with the adequacy of the mine's ventilation system. In terms of MESA's enforcement efforts regarding Scotia's ventilation plan, our investigation has raised a question as to the adequacy of MESA's efforts in reviewing and properly evaluating Scotia's ventilation plan.

To begin with, there is a serious unanswered question as to the unusual length of time involved in MESA's approval of Scotia's 1976 ventilation plan. Scotia submitted its 1976 plan in January which MESA neither approved or denied. On March 1, Scotia submitted another version of its proposed ventilation plan, but as of the date of the first explosion MESA had taken no action. According to R. Keene, MESA Mining Engineer for the Pikeville District Office, such a delay was unusual. Keene told the MESA investigation panel that any length of time in excess of a month or six weeks for MESA to act on a proposed ventilation plan was unusual. Thus far we have been unable to determine why, after nearly 2½ months preceding the March 9 explosion, MESA failed to take action on Scotia's proposed ventilation plan.

Another concern we have regarding Scotia's ventilation plan is the MESA procedures for evaluating and reviewing such plans. According to MESA mining engineer R. Keene, ventilation plans are approved on the basis of air quantity figures supplied to MESA by the company, and then periodically checked by MESA inspectors to determine compliance. During the MESA investigation hearings Keene was asked:

QUESTION. In the ventilation quantities that are reported to you, these quantities are measured by the section foreman or by Mr. Bently or whomever is making the mine. You do not personally go in periodically and make a check on the ventilation or quantities in any locations in the mine?

KEENE. The plan is approved based on what the Company submits. This plan is checked periodically by coal mine safety inspectors and the ventilation department.

To a certain extent, Mr. Keene's contention that the ventilation plan is periodically checked to determine compliance is substantiated by the record. During the 15-month period prior to the Scotia disaster, the mine had been cited 18 times for failure to comply with the approved ventilation plan. However, the record also indicates that it is extremely difficult for a single MESA inspector to determine full compliance with the approved ventilation plan. Herschel Potter, Chief of MESA's Division of Safety, told the Joint House-Senate panel that the only way to determine the adequacy of a mine's ventilation system would be to conduct a complete ventilation survey, "but there is no way that that inspector making an inspection could

have come to that point." The last ventilation survey conducted at the Scotia mine was in 1974.

A very important example of where the MESA ventilation plan inspection system broke down can be found in MESA's last "regular" health and safety inspection of the Scotia mine conducted prior to the March 9 explosion. During the period January-February 1976, MESA inspectors spent about eight weeks inspecting the entire Scotia mine. However, this inspection failed to take notice of the fact that coal production had been altered in that section of the mine which subsequently exploded. Prior to initiating production in this section, 2 Left panel off 2 Southeast main, Scotia, in violation of MESA regulations, failed to notify MESA of its intentions. Thus, when production in this section was begun in February, Scotia violated its ventilation plan and remained in violation of the plan through the disasters of March 9 and March 11. During the MESA investigation hearings, MESA mining engineer Keene was questioned about this development. According to the hearing transcript:

QUESTION. Should you have been notified that 2 Left was begun?

KEENE. That is the requirement of the plan; that the projection be shown on each approved map.

QUESTION. Were you not made aware that they moved into 2 Left?

KEENE. When I first became aware that they moved into 2 Left was when they submitted the map on March 1st.

QUESTION. However, they moved in there roughly around—?

KEENE. About a month prior to that date. The section was advanced approximately four breaks at that time (March 1st).

QUESTION. Did you consider that a violation of the ventilation plan?

KEENE. I would.

The two points we want to make here—in addition to the fact that the Company violated its approved ventilation plan—are:

1. MESA's eight week "regular" inspection of the Scotia mine was conducted about the same time that production was started in the 2 Left section but the inspection failed to uncover the fact that this production activity violated Scotia's ventilation plan.

2. Keene was aware of the fact that Scotia was in violation of its ventilation plan on March 1st, eight days before the explosion, but there is no record of him or anyone else from MESA taking any action against Scotia for this violation.

Given this experience, we are of the opinion that MESA's review, evaluation, and enforcement actions vis-a-vis the Scotia ventilation plan were, at best, sloppy. We question MESA's unusual delay in taking action on Scotia's 1976 ventilation plan. We question MESA's policy of accepting company data upon which plans are approved. We question the adequacy of MESA's inspection and enforcement actions for determining ventilation plan compliance. There is little doubt that Mr. Barrett's intentions to more adequately review and evaluate ventilation plans are absolutely necessary.

Mine Profile Rating System

According to MESA Administrator Barrett, the agency is moving to fully implement a "mine profile rating system", now in a pilot stage, "to better pinpoint mining operations for increased enforcement." Barrett said that in addition to relying on accident injury experience, the new system also "takes into account the history and nature of violations of federal standards at a mine and the health and safety management system at the mine."

It is very unfortunate that MESA has waited this long to initiate such a system. Our review of the entire Scotia record indicates that MESA's enforcement efforts at the mine failed to include, or even be effectively cognizant of, the "history and nature of violations of federal standards at the mine, and the health and safety management at the mine."

Our research into the Scotia disaster has raised two significant questions with respect to the use of enforcement information at the Scotia mine:

1. Whether local MESA officials adequately utilized the information they had on the Scotia mine, particularly its history of violations.

2. Whether MESA's national information system was such so as to bring Scotia-type mines to the attention of top MESA officials.

Based upon what is now known, it must be concluded that local MESA officials responsible for the Scotia mine did not adequately and effectively use the information they had on Scotia, and that MESA's national information system was insufficient in bringing Scotia-type mines to the attention of top MESA officials.

Based upon the Joint House-Senate Committee hearings, the following has been determined with respect to the use and flow of MESA enforcement information:

- as with other mines in the area, the history of MESA's enforcement activities at the Scotia mine consisted solely of a collection of previous inspection reports;
- local MESA management officials testified that their inspectors were instructed to review each of the prior inspection reports before conducting a mine inspection;
- at least one local MESA official testified, however, that inspectors were only required to review the last prior inspection report before conducting an inspection;
- the local MESA officials were vague as to what use was made of the inspection information forwarded to the national or regional offices. One such local official said that he "could care less" what happened to the information once it left the local office;
- the flow of enforcement related information stopped at the district or subdistrict office level, thereby never effectively reaching MESA's upper echelons.

All of these points were succinctly dramatized by Representative John H. Dent, Chairman of the House Committee on Education and Labor's Subcommittee on Labor Standards, in his questioning of MESA officials during the Joint House-Senate hearings. The following excerpts from the May 13, 1976, hearing provides some insight into MESA's enforcement information system:

DENT. In asking the question of Mr. Taylor (Ben Taylor, MESA Coal Mine Inspection Supervisor, Whitesburg, Kentucky, office) the Chairman, Mr. Williams, asked him what disposition was made of the reports of the inspectors. He said that he just sent them all up, passed them on through. Then he was asked what happens to them after they leave his office. He said he could care less . . . Would it not have been proper and probably essential that he would make some notations on his transmittal and a note for himself stating and adding up these violations so that someone up above will take a look at them . . . There was no notice

anywhere from anyone that we talked to that even had an idea that these violations were that numerous in any particular month?

PHILLIPS. (Lawrence Phillips, MESA District Manager, Pikeville, Kentucky, office) This has already been addressed and Mr. Potter (Herschel Potter, Chief of MESA's Division of Safety) apologized for Mr. Taylor's comments. They do not reflect our thinking. You talked to the wrong coal mining inspector. The one under him is Mr. Herman Lucas. The reports are reviewed very, very thoroughly by him . . .

DENT. (Later in the hearing). Do you up at the top in your position as Chief of Safety, have a law (regulation) on this particular mine (Scotia) because of its operation and the multiplicity of violations . . . ?

POTTER. An inspection history of every coal mine is available in the field office from which it is inspected. A copy of that report is sent to the district or sub-district office . . . The inspectors' instructions are contrary to what Mr. Taylor's statement was to you. They are to review the inspection history of the mines prior to making the inspection, look at the ventilation plan, training plans, everything that is supposed to be submitted by the operators prior to making an inspection. Those inspection reports are not mailed to the Arlington (Virginia) office (MESA's National Headquarters).

(Later in the dialogue Potter said that the data collected nationally) "does not contain the component history of an inspection that we need to know prior to making an inspection."

What is particularly revealing about this testimony is that in the first place, there is confusion on the local MESA level as to how thoroughly MESA inspectors are to review a given mine's history. Phillips and Potter said that inspectors were to review the entire history, while Taylor had previously testified that inspectors were to only review the last inspection report. In addition, the above testimony clearly indicates that for enforcement purposes all of the pertinent information remains at the local level, never reaching top MESA officials.

Another more serious issue—one which is perhaps fundamental to this investigation—is, even if the local MESA officials were completely aware of Scotia's entire safety history, there is very little evidence to suggest that this knowledge affected MESA's enforcement efforts at the mine. As this report has shown, MESA's enforcement record at the Scotia mine was neither progressive nor cumulative in taking punitive actions against Scotia for repeated, chronic and, we believe, willful violations of the Coal Mine Health and Safety Act.

If the local MESA management officials were thoroughly aware of Scotia's history, why did they not more fully use their mine closure authority, or their criminal sanctions power, or their monetary penalty authority? If these officials knew of Scotia's safety and health record, why does the record not show progressively more inspections of the entire mine rather than a continuation of spot inspections; and if the inspectors were to carefully review the mine's ventilation plan, why did the eight-week inspection in January-February 1976 fail to uncover the fact that Scotia was violating its ventilation plan? Further, if, as Mr. Potter suggests, inspectors were to review a mine's employee training plan, why was it that Scotia was never once cited for failure to conduct fire and evacuation drills?

It appears to us that if MESA knew all that should have been known about the health and safety history of the Scotia Mine, and thus continued to exercise the kind of enforcement policies that the record indicates were exercised, then something is very radically wrong with MESA's overall approach. If this analysis of MESA's enforcement policies at the Scotia mine is even close to being correct, and we

believe it is, then the reforms outlined by Mr. Barrett—while no doubt necessary—simply do not go far enough. We believe that MESA's enforcement efforts and policies with respect to the Scotia mine were such that the Company essentially was permitted to ignore the law. We further believe that the March 9 and March 11 disasters could and should have been prevented.

SCOTIA COAL MINE EXPLOSIONS . . . MARCH 9 AND MARCH 11, 1976

While all the causal factors involved in the Scotia disaster have yet to be determined, enough is presently known about the March 9 and March 11 explosions to warrant examination and analysis. To adequately conduct such an analysis, it is useful to examine the events of March 9 and March 11 in four separate chronological stages:

1. The period from March 8th to the first explosion on March 9th;
2. The period between the March 9th and March 11th explosions;
3. The period immediately following the March 11th explosion to the sealing of the mine;
4. The period from the mine's sealing to the present.

I. PERIOD COVERING THE FIRST EXPLOSION

Based upon our investigation and research, the staff has determined that there were at least five major issues involved in the first explosion:

1. The nature of the MESA inspection conducted on March 8th, less than 24 hours before the first explosion;
2. The nature of the March 9th preshift examination of the mine by Scotia officials;
3. The ventilation status of that section of the mine where the explosion occurred (2 Southeast main);
4. The possible ignition sources involved in the first explosion;
5. The safety status of the six miners who survived the initial explosion but who subsequently suffocated to death.

The March 8 MESA Inspection.—On March 8, 1976, MESA inspector Cecil Davis spent approximately eight hours underground inspecting the Scotia mine. In terms of the explosion which occurred the next day, two major questions have arisen with respect to the Davis inspection:

1. Was the inspection sufficiently adequate to have uncovered and corrected the conditions which led to the first explosion?
2. Did Scotia personnel engage in activities designed to deceive the MESA inspector, particularly in terms of the ventilation conditions in that general section of the mine which exploded?

While the specific causes of the first explosion have yet to be determined, there is general agreement that the conditions which led to the explosion in the 2 Southeast main (2SEM) included an explosive build-up of methane gas, inadequate ventilation, and an ignition source. As to whether some of these conditions existed in 2SEM on March 8th, it is not our purpose to either fix individual blame or to call into question the professional competence of MESA inspector Davis. However, based on a review of the available evidence, the staff has concluded that by its very nature, the March 8th MESA

inspection was insufficient so far as the conditions in 2SEM were concerned. On the question of deceptive practices, the record contains evidence of such practices including violations of the ventilation system in 2SEM to achieve temporary ventilation compliance with a MESA notice of violation in the 2 Left panel, off 2SEM.

In terms of the Davis inspection, the record indicates that it was limited in both purpose and scope. During his testimony before the MESA investigation panel Davis said that he was a "coal mine health technical specialist" and his primary job was "concerned with the evaluation of respirable dust and noise." According to Davis, his assignment on March 8 was "to begin evaluations (respirable dust) of the—all sections of the Scotia, Upper Taggart Mine in the 'B' seam . . . This would be a complete *health* (inspection) of the entire Blue Diamond operations at Oven Fork". (emphasis added) Davis stated that the geographic focus of his March 8th inspection was the 2 Left Panel (so-called "tailpiece") off 2SEM. Except for noticing general mine conditions as he traveled to the designated area, the only section which Davis inspected was the 2 Left Panel. It is critical to this analysis to note that Davis did not go into, nor did he inspect, that portion of 2SEM where the explosion occurred. It should be noted that the 2 Left Panel is adjacent to 2SEM, according to Davis:

My instructions, you have really got a lot to do if you are evaluating respirable dust. And all the different aspects that go into this particular type of inspection. We are instructed that the only thing that we are to be concerned with is the condition of the section inby the section loading point which is the tailpiece (2 Left Panel).

Davis testified it was not part of his inspection to inspect 2SEM for ventilation or other possible hazardous conditions. According to the MESA hearing transcript:

QUESTION. Are you saying that when you went up the track through the intersection into 2 Left and there was no curtain (air regulator) that it would not have been part of your inspection to have considered the potential trouble spot up the Main (where the explosion occurred)?

DAVIS. No Sir. Any outby areas, that is not my inspection . . .

While it is obvious that Davis' major concern was respirable dust conditions in the 2 Left Panel, he did in fact notice other mine conditions, and cited Scotia for a number of violations including:

- Insufficient air reaching the face of the 2 Left Panel (less than the required 9,000 cubic feet out from the face);
- The line curtain used for directing air to the number 5 entry working face of 2 Left was more than 10 feet out from the face;
- Eleven water sprays on the continuous miner in the 2 Left section were inoperable;
- The average concentration of respirable dust was 5.2 milligrams per cubic meter of air, which was excessive.

From the Davis testimony it is clear that while he conducted a rather complete examination of the 2 Left Panel, the very limited nature of his inspection could not have uncovered or corrected any dangerous conditions in that section of 2SEM which subsequently exploded.

Of all the disturbing aspects of the Davis inspection, perhaps the most disturbing is related to his citation for inadequate air reaching the working face of the 2 Left Panel, and the deceptive manner in which Scotia employees "corrected" the violation. According to

Davis, he issued the insufficient air notice between 3:30 P.M. and 4:00 P.M. When he remeasured the air flow at 6:00 P.M. he found it adequate at 10,472 cubic feet per minute. Without attempting to determine how and from where the additional air was obtained, Davis terminated the notice he had issued two hours before.

Testimony taken at the MESA investigation hearings strongly suggests that temporary "compliance" with the Davis notice was achieved by "robbing" air from other sections of the mine and diverting it into the 2 Left Panel. According to Merle Rhodes, assistant mine foreman at Scotia, he was aware that Scotia management officials were considering erecting temporary curtains to divert more air from 2SEM into the 2 Left Panel. Rhodes said that he counseled against the use of such curtains because they might permit dangerous concentrations of methane to build-up in the upper portion of 2SEM. According to the hearing transcript:

QUESTION. You say that you were not aware of nor were you present when there was discussion regarding the hanging of two checks (curtains) across the straight (of 2SEM), that is four and five?

RHODES. The boss asked me about hanging them and I told him not to hang the curtains.

QUESTION. The boss is?

RHODES. James Williams (the section foreman).

QUESTION. But you were aware that he was (planning to hang the curtains)?

RHODES. He didn't say what particular vicinity he was going to hang the curtains. If he did, I didn't catch it. He was talking about hanging some curtains and you know I thought that is what he was talking about (hanging them to divert air). I told him not to hang it because of the gas accumulating.

QUESTION. But you knew that he was thinking about it?

RHODES. I know he said he had been told to do it but I don't know whether he had or not.

The record indicates that Williams, with the assistance of other Scotia employees, did in fact hang the curtains thereby diverting air into the 2 Left Panel by interrupting the air flow into 2SEM. Gary Smith, a Scotia utility man told the MESA panel that he helped Williams hang the air diverting curtains. According to the MESA hearing transcript:

QUESTION. Are you aware that he (MESA Inspector Davis) had taken an air reading and it was deficient?

SMITH. Yes.

QUESTION. After he took the air reading and let the section foreman (Williams) know that there was a violation, what was done to correct that violation as far as you know?

SMITH. We hung block curtains up there (2SEM) in the track at four and five.

QUESTION. Were you instructed to do that?

SMITH. Yes.

QUESTION. You were instructed to put up two check curtains?

SMITH. Yes.

QUESTION. Across four and five—

SMITH. Four and five.

QUESTION. In the main?

SMITH. Yes.

QUESTION. You were instructed to do this by whom?

SMITH. Bird Dog. Jim is his real name.

QUESTION. Mr. Williams?

SMITH. Yes.

QUESTION. Was anyone else present when you were hanging these curtains?

SMITH. Yes, Hargus Maggard and Jim (Williams), they helped me.

QUESTION. Were there any others who were aware of the fact that you were hanging curtains?

SMITH. Not right then.

QUESTION. Later was someone aware of it?

SMITH. Yes, Carl Smith and Matnack went and took them down. Roy Matnack.

QUESTION. Mr. Smith, was the inspector aware of what you were doing?

SMITH. No.

QUESTION. Was there any reason given to you for hanging those checks?

SMITH. We didn't have enough air. That is what Bird Dog (Jim Williams) said. And that was good enough.

Thus in terms of the March 8th MESA inspection, the record indicates that it was conducted by a "coal mine health technical specialist" whose primary purpose was to evaluate the respirable dust conditions exclusively in the 2 Left Panel off 2SEM. The record also shows that the MESA inspector did not go into that section of 2SEM where the explosion occurred, and therefore could not have been aware of any dangerous conditions in that section. In addition, the record supports the assumption that "something" was wrong with the ventilation in 2SEM including the 2 Left Panel, and that Scotia employees purposefully diverted air from 2SEM into the 2 Left Panel so as to achieve temporary "compliance" with the Davis violation notice. In this respect, whatever was technically wrong with the ventilation in 2 Left Panel was never corrected, and may have been one of the factors contributing to the March 9th explosion.

March 9 Preshift Examination.—The Coal Mine Health and Safety Act requires a preshift examination for possible hazardous ventilation, methane, and other conditions within three hours prior to any miner entering an active working area of the mine. The Act also requires that such examinations are to be conducted at least once a week in those "idle" areas of a mine in which no one is working.

In terms of the March 9th explosion, it has been determined that the required preshift examination of 2SEM was not conducted, and that the Scotia official directly responsible for the preshift inspection falsely signed the inspection records.

Before detailing the nature of the March 9th preshift examination (fireboss inspection), it is necessary to briefly characterize the status of 2SEM and its 2 Left Panel prior to the explosion. In early February 1976, active mining at the face of 2SEM was temporarily discontinued because Scotia's existing mining equipment was not adequate to efficiently mine the high coal face. While the Company awaited the delivery of the necessary machinery to resume production at the face of 2SEM, it began production in the 2 Left Panel off 2SEM. As previously noted, Scotia failed to report this new production to MESA and thus was in violation of the mine's ventilation plan.

Given the fact that production had stopped at the face of 2SEM, there is some question as to its preshift examination status. The Scotia officials directly responsible for the preshift inspection testified that because production at the face of 2SEM had stopped, they considered that section as "idle" and therefore not requiring the necessary preshift inspection. However, other Scotia officials testified that they considered the section "active" and therefore subject to inspection prior to each shift. In the staff's opinion this latter judgment should have prevailed because at least a week prior to March 9, a decision was made to use the upper portion of 2SEM as a storage area for track rails that were to be used in the section once production at the face resumed.

On the morning of March 9th, two Scotia employees, who were subsequently killed in the first explosion, were instructed to take the

initial load of track rails into the 2SEM storage area. To move the rails these men used two locomotives, one equipped with air breaks operated by an automatic compressor. By ordering men into 2SEM, all doubt should have been removed as to the status of the section. It was an active section and should have been properly firebossed before the men and their locomotives went into the section. As previously stated, this examination was not made. Also, testimony presented at the MESA investigation hearings established that the pre-shift examination records were falsified.

The two Scotia officials directly responsible for the March 9th pre-shift examinations were Charles Fields, the third-shift fireboss, and Arvil Cornett, Scotia's third-shift foreman. From their testimony, and that of other Scotia officials, the following has been determined:

1. The section of 2SEM which exploded was very seldom firebossed in the weeks immediately prior to March 9th;
2. The section of 2SEM which exploded was not firebossed on March 9th;
3. The only relevant section firebossed on March 9th was the 2 Left Panel off 2SEM; and
4. The fireboss records for March 9th, and at other times, were falsified.

During the MESA hearings Fields was asked:

QUESTION. Were you in 2 Southeast Mains after the (continuous) miner pulled out of that section of the mine where the explosions occurred?

FIELDS. Yes.

QUESTION. How often did you get up there?

FIELDS. Well not very often.

QUESTION. There were approximately six weeks between the time the equipment was pulled out of the Mains and moved to 2 Left. . . . How many times would you say during that five or six week period were you up the mains?

FIELDS. Really I was up there I would say twice.

When questioned as to whether he had firebossed the 2SEM section which exploded on March 9th, Fields told the MESA panel, "I didn't do it." As for Cornett, his testimony indicated that neither did he fireboss that particular section. According to the hearing transcript:

QUESTION. On the night before the first explosion, or the morning, I should say, did you examine the 2 Southeast Mains and the 2 Left section of Southeast mains?

CORNETT. I examined the 2 Left section earlier.

QUESTION. Did you examine the Mains?

CORNETT. No, I didn't check the mains. I checked the 2 Left panel.

In terms of falsifying the preshift examination records Fields testified that he regularly signed the "fireboss book" indicating that he had conducted the required inspections when, in many cases he had not personally made the inspections for which he signed the book. A case in point was that Fields signed the book for the March 9th inspection of the 2 Left Panel when, in fact, Cornett was the one who made the examination. According to the MESA hearing transcript:

QUESTION. This (the fireboss book) begins on 3/5/76 and those are the records of the preshift examinations that were signed for by Mr. Fields prior to the explosions. Those are your signatures at the bottom of this particular page (for March 9th.)? You agree they are copies of the fireboss book?

FIELDS. Yes Sir.

QUESTION. And you signed for the exams?

FIELDS. Yes.

QUESTION. But you did not make them?

FIELDS. No.

QUESTION (Later in the hearing). In other words when you made the preshift exam who and how was the policy established that would allow you to sign the book for someone else's examination? Was that your own doing or how was that established?

FIELDS. Well I have done that ever since I have been there.

QUESTION. And it was never called to your attention that that was not according to the way it should be? That is that you signed the books? You stated (in the books) that places were safe, did not have hazardous conditions. You put measurements into the book. You signed the book. And yet someone else did in fact make the examination according to your testimony?

FIELDS. Yes.

From the record it is clear that prior to the two men and their locomotives moving into 2SEM nothing was known about the immediate conditions of the section. The Scotia official who ordered them into that section—J. P. Feltner, a Scotia construction foreman—testified that he considered the section as “active” and assumed that it had been firebossed prior to the men beginning work. Fields and Cornett stated that they did not know that the two men were going into 2SEM on March 9th. Richard Combs, Scotia's general service foreman, stated that while he considered the section “idle”, he thought that it was being firebossed once a week as required. Combs also said that he and Feltner had talked about using the section to store the track rails, but he did not know that the men were going into the section on March 9th. Feltner, however, testified that he called Combs on the morning of March 9th and told him that the work was being carried out.

Out of all this conflicting testimony comes the fact that for whatever reason, that section which exploded on March 9th had not been firebossed. As previously noted, the MESA inspection of March 8th uncovered evidence—which was not fully recognized by the MESA inspector—that there were ventilation problems in the 2SEM and 2 Left Panel sections of the mine. Unfortunately, it is unknown as to what conditions would have been found in 2SEM had it been firebossed at least three hours preceding the shift in which the two men took their locomotives into the section.

Ventilation and Methane in 2 Southeast Main (2SEM).—There is a general consensus that the conditions which caused the March 9th explosion in 2SEM included an explosive build-up (5 to 15 percent) of methane gas, inadequate ventilation, and an unknown ignition source. With respect to the ventilation and methane conditions in the general area of 2SEM the following is known:

- coal production in the 2 Left panel off 2SEM violated Scotia's ventilation plan;
- a methane gas feeder has been reported near the face of 2SEM;
- ventilation problems were experienced in the 2 Left panel off 2SEM both the day before and immediately prior to the explosion;
- Scotia officials engaged in questionable practices to correct the ventilation problems the day before the explosion;
- the section of 2SEM which exploded had not been firebossed for dangerous methane and ventilation conditions prior to the March 9th shift when the two Scotia employees moved into the area with two locomotives, one of which was equipped with a questionable air compressor.

Before discussing the above points, a few general observations on Scotia's ventilation and methane status should be made. First, it should be noted that there are differences between the Federal and State of

Kentucky's definitions of "adequate ventilation." The Federal Coal Mine Health and Safety Act describes adequate ventilation as a minimum of 9,000 cubic feet of air per minute passing over the last open cross-cut at the face of a mine. The Kentucky Department of Mines and Minerals, has, however, ruled that due to Scotia's high liberation of methane, 16,000 cubic feet per minute is required for safety. According to the record, the Scotia mine, at best, produced about 10,000 cubic feet of air per minute.

The second observation has to do with the flow of air into the 2SEM region of the mine. The intake air for this section traveled up the right side of 2SEM across the face and down the left side of the main to the 2 Left panel. By using air regulating curtains, the air moved up the right side of 2 Left panel, across its face, down the left side of the panel, and back out into the 2SEM shaft. What is significant about this air flow system is that according to Scotia's existing approved ventilation plan, no air should have been going into the 2 Left panel since Scotia did not have MESA's approval to be producing coal in the panel.

The third observation is that some of the miners who appeared before the MESA investigation panel (Carlos Smith, Gary Smith, and Pat Pate) testified that ventilation in the 2 Left panel was often poor, and regulating curtains governing the air flow to the face of 2SEM were often moved so as to improve the air in the 2 Left panel. Arvil Cornett, Scotia's third-shift mine foreman, testified that the quantity of air reaching the 2 Left panel varied greatly, as much as 4,000 cubic feet per minute from one reading to another.

The final observation is simply to note what has been previously discussed in some detail; the Scotia mine had a long and repeated history of ventilation violations. From January 1974 to February 1976, the mine was cited for 63 separate violations of federal ventilation standards.

In terms of what is specifically known concerning the ventilation and methane conditions in the 2SEM and the 2 Left panel at the time of the explosion, one of the most significant factors is that Scotia had no business even producing coal in the 2 Left panel. As previously noted, production in the panel was begun in February 1976, without informing and receiving MESA's approval. The first anyone from MESA knew of the new production was on March 1st when Scotia resubmitted its new ventilation plan. While MESA inspector Cecil Davis, on March 8, inspected the 2 Left panel, he obviously did not know that it was in violation of the ventilation plan. To begin production in the 2 Left panel, Scotia had to remove a permanent air stopping which had previously prevented the air in 2SEM from going into the panel. By removing this stopping and diverting air into the 2 Left panel, Scotia may have effectively short-circuited the air in the 2SEM.

In terms of methane gas production it is known that the Scotia mine was the most gassy mine in Eastern Kentucky, liberating 250,000 to 500,000 cubic feet of gas per 24-hour period. In addition, the record indicates the prior existence of a methane gas feeder in the floor of 2SEM near the face. Charles Fields, Scotia third-shift fireboss, testified that he knew of the feeder and had checked it while active production was going on at the face of 2SEM, before the 2 Left panel was opened up. Fields said that when he measured the methane con-

centration at the floor, near the feeder, it registered at least 5 percent. However, when he took the same reading at a level somewhat higher from the floor, "it showed nothing." What this indicates is that while production was continuing at the face of 2SEM, before the 2 Left panel was begun, the ventilation up 2SEM was sufficient to disburse any methane being produced. However, once production at the face of 2SEM was discontinued and begun in the 2 Left panel, the ventilation system was changed. Since Fields only inspected the area twice during the six-week period prior to the explosion, very little was known concerning the methane and ventilation status of the upper section of 2SEM.

If, as the record so indicates, ventilation problems were experienced in the 2 Left panel, both on the day before and immediately prior to the explosion, and if, as the record also indicates, Scotia employees engaged in questionable practices to divert more air into the 2 Left panel by "robbing" air from 2SEM, then methane from the feeder and other possible sources could have built-up in 2SEM.

Regarding ventilation problems experienced in the 2 Left panel the day before the explosion, it is known that MESA inspector Davis issued a violation notice to the effect that not enough air was reaching the face of 2 Left panel. At approximately 3:45 P.M., Davis measured the air reaching the face of 2 Left panel and found that it was only 8,092 cubic feet per minute. He issued a notice which was terminated about 2 hours later when he remeasured the air flow and found it to be 10,472 feet per minute. Davis never attempted to determine how the additional 2,360 feet was achieved. As previously discussed, Scotia foreman Jim Williams ordered a curtain hung across the 2SEM shaft thereby interrupting the air flow up the main shaft and diverting it into the 2 Left Panel, and thereby achieving temporary "compliance" with the Davis notice. Assistant mine foreman Merle Rhodes testified that he was against the erection of the curtain because of the danger "of the gas accumulating" in the upper portions of 2SEM. Once Davis left the mine the curtain blocking 2SEM was taken down.

However, there is nothing in the record to suggest that the ventilation problem uncovered by Davis in the 2 Left panel on March 8, was ever actually corrected. As a matter of fact, on the morning of March 9th, ventilation problems were once again experienced in the 2 Left panel. According to testimony, on the morning of March 9th, at approximately 11:30 A.M., Virgil Coots, the section foreman killed in the explosion—called James Bentley, Scotia's assistant foreman responsible for ventilation, and reported that he had "just lost his air" in the 2 Left panel. Bentley said that he told Coots to check air curtains. At about this same time the two railmen were moving their locomotives into the upper portion of 2SEM; the explosion occurred at approximately 11:35 A.M.

While we do not know the precise conditions which existed in either the 2 Left panel or the upper portion of 2SEM during the period immediately prior to the explosion, it is known that the 2 Left panel was suffering ventilation problems. We also know that the environment in the upper portion of 2SEM was unknown to anyone, and that there may have been at least one source liberating methane gas. From the fact that the explosion occurred at all, it must be assumed that ventilation in the upper portion of 2SEM was inadequate to

flush out the dangerous concentrations of methane which had to exist at the time of the explosion.

Possible Ignition Sources.—Perhaps the most significant unknown factor involved in the March 9th explosion is the source which ignited the accumulated methane gas in the upper portion of 2SEM. Since the explosion, a great deal of speculation has surrounded possible ignition sources. However, given the fact the explosion occurred minutes after the two Scotia employees moved their locomotives into the section that exploded, it is reasonable to suggest that the ignition source was in some way related to this activity. This assumption is further substantiated by the fact that the mine rescue teams who recovered the bodies, reported that most of the visible explosion-related violence in the mine was in the immediate area of the locomotives. The teams reported that the battery lids on the locomotives had been blown off, the mine roof and walls showed evidence of a violent explosion, and debris was scattered throughout the area of the locomotives.

As for the specific ignition source, the speculation has ranged from the possibility that the men were smoking to the possibility that the automatic compressor on one of the locomotives fitted with air brakes caused an electric arc or spark which ignited the methane. Other possible sources include a spark or arc resulting from a roof fall, unloading the steel rails, friction from the locomotives, and faulty electrical equipment or wiring.

Smoking.—Although smoking in a working area of a mine is prohibited by law, it nevertheless does occur. However, in the case of Scotia, there is no evidence to indicate that smoking caused the ignition. During the MESA investigation hearings, all those asked the question stated that they never witnessed anyone smoking in the Scotia mine. In addition, the rescue teams who recovered the bodies stated that no smoking materials were found. Also, no evidence was presented during the investigation hearings to indicate that any of the victims had smoking materials in their possession.

Roof Fall.—Rocks falling from a mine roof or rib often produce sparks when they hit steel rails or the mine floor. However, while a rock fall may have occurred, the circumstantial evidence reported by the rescue teams indicates the absence of any such occurrence.

Unloading of Steel Rails.—The two men and their locomotives were in 2SEM to unload and store steel track rails which were loaded on cars being pushed by the locomotives. There is a possibility that one or more of these rails may have fallen off the cars or may have been unloaded in such a way so as to cause an ignition spark. On this possibility, however, there is no evidence at all.

Friction Sparks from Locomotives.—An ignition spark may have been created by the wheels of the locomotives and/or their cars if at any time it became necessary for a quick start or hard stop. Such a spark could have been caused by the friction of the metal wheels against the metal track rails. As to this possibility, there is no evidence.

Electricity.—Prior to the first explosion, there were circuits feeding electricity into the area of 2SEM. During the recovery operations it was found that fuse boxes in the area had been subjected to intense heat and may have short-circuited. Another possibility is that an electric wire may have been looped across the rail tracks and that the locomotives may have severed the wire causing an ignition spark.

Locomotive and Compressor.—Of the two locomotives taken into 2SEM on the morning of March 9, 1976, one was of a questionable nature due to the automatic compressor which governed its air brake system. This particular machine was a Goodman locomotive initially purchased in 1942 and subsequently acquired by Scotia. This locomotive was originally fitted with hydraulic and manual brakes. However, the original braking system was inadequate to control the locomotive on steep grades, and several times at the Scotia mine it had “run away . . . and imbedded itself in the rib.” To improve the braking system, air brakes were installed on this machine, with a one-horsepower compressor and an open type pressure control switch. Thus, the machine automatically monitored the air pressure in the braking system and switched on the compressor whenever it was necessary to maintain the braking pressure. Testimony indicated that this compressor “kicked on” about every 15 or 20 minutes. Whenever the air compressor was engaged the control switch would cause a substantial arc. The testimony at the hearings unanimously agreed that the arc caused by the compressor would have been more than sufficient to ignite an explosive concentration of methane. It should be noted that due to this type of “open spark” generator, this locomotive probably should not have been used in this section of the mine.

Other than the arc created by the automatic compressor there is also the possibility that an ignition spark resulted from the batteries which powered the locomotives, or from some other mechanical source related to the locomotive.

Given the fact that the second explosion of March 11th occurred in the same general area as the March 9th explosion, there is some question as to whether the first explosion ignition source will ever be conclusively determined. Beyond what is outlined above, any further analysis of possible ignition sources related to the first explosion must await the reopening of the mine and a thorough scientific investigation of the physical evidence.

Safety Status of the Six Trapped Miners.—As previously discussed in this report, six of the fifteen miners killed in the first explosion survived the initial blast but subsequently suffocated to death. The record contains professional testimony to the effect that these six miners, who barricaded themselves in an air pocket near the face of the 2 Left panel off 2SEM and who suffocated when their self-rescue breathing apparatus’ became inoperable—probably could have saved themselves simply by walking out of the mine following the explosion. It has also been determined from the record that Scotia’s safety training program was a “sham” and that fire and evacuation drills were nearly nonexistent at the mine. In addition, it has been determined that there was little if any emergency survival equipment (e.g., oxygen masks, barricading curtains or rebreathers) stored in Scotia’s underground working areas.

From all of this, it can be assumed that had the six miners been properly trained in disaster and evacuation procedures, and had they had access to the proper survival equipment, they possibly could have saved themselves.

II. PERIOD FROM THE FIRST TO THE SECOND EXPLOSION

The first explosion at the Scotia mine occurred at about 11:35 a.m. on March 9, followed some 60 hours later by a second explosion at

approximately 11:20 p.m. on March 11. Throughout this entire period, except for a few hours immediately following the first explosion, the Scotia mine was under MESA's effective control. MESA supervised the rescue and recovery operations and was responsible for all relevant decisions and actions, including the decision to send 13 men into the mine on March 11, eleven of whom were killed in the explosion that day. Thus, the committee staff believes that if responsibility for the second tragedy is to be assessed, then that responsibility must rest with MESA.

Based upon our research and investigation, it has been determined that there were at least three major issues involved in the second explosion:

1. The environmental status of the mine following the first explosion.
2. Possible ignition sources involved in the second explosion.
3. The nature of MESA's decisions between the two explosions.

Environmental Status of the Mine.—Based upon information obtained from the rescue, recovery and investigation teams that went into the mine after the first explosion, the following is known with respect to the prevailing environmental conditions:

- Nearly all the mine damage resulting from the first explosion was found in the area of the two locomotives located in the upper portions of 2 SEM;
- Dangerous concentrations of methane and carbon monoxide were found in 2 SEM;
- Work crews were unable to restore adequate ventilation to 2 SEM;
- A hazardous roof condition was found to have developed at the entrance of 2 SEM;
- The upper portions of 2 SEM where the second explosion originated were not inspected or fire bossed for hazardous conditions.

The rescue teams that went into the mine following the first explosion on March 9, reported that they observed explosion-related mine damage in that section of 2 SEM approximately 1,000 feet from the face. John Collins, captain of the National Mines rescue team, told the House-Senate Committee that "the entire area was charred . . . Everything was charred from the fresh air base where we started, all the way up to the face" (approximately 1,000 feet). In addition, the rescue teams reported that a number of air stoppings had been blown out and the battery lids on the two locomotives had been blown off.

The rescue teams also reported heavy and dangerous concentrations of methane gas and carbon monoxide in the upper portions of 2 SEM. Collins said that the last report his team made from the face of 2 SEM indicated 5 percent methane, 15 to 16 percent oxygen and a "CO reading". Collins admitted that the methane concentration could have been higher but the measuring equipment only had a 5 percent scale. Other rescue teams confirmed methane readings of as high as 5 percent and heavy carbon monoxide concentrations. As will be discussed more fully below, these methane and CO measurements by the rescue teams, recorded in the early morning hours of March 10, were the last to be taken in 2 SEM. From the time the rescue teams recovered the last two bodies near the locomotives,

nothing more was known about the environmental conditions in 2 SEM.

Upon entering the mine on March 9, the rescue teams found that they could not advance their fresh air base beyond the entrance of 2 SEM, and had to recover the bodies of the two locomotive men under self-contained breathing equipment. Following the recovery of the bodies, attempts were made to restore ventilation to 2 SEM. On March 10, work crews worked until midnight attempting to restore ventilation but to no avail. According to William Clemons, the MESA official in charge of the entire rescue and recovery operation, "We could not get air in there (in 2 SEM)".

Also, on March 10, a hazardous roof condition was found to exist at the entrance to 2 SEM. The roof was temporarily supported until the work crew was withdrawn from the mine at about midnight.

Prior to the first work crew going into the mine on March 10, in the first attempt to restore ventilation, however, that portion of the mine where they were to work—not near 2 SEM—had been inspected and firebossed. Clemons stated, "Prior to anyone entering the mine that afternoon (March 10), a fireboss examination was made in the areas that required such an examination." In addition, a second fireboss examination was conducted on the morning of March 11, at 8:14 A.M., prior to the thirteen man work crew entering the mine at 4:15 P.M. later that same day. According to MESA Administrator Robert Barrett:

The MESA and Scotia Coal Company men who began to enter the mine at 8:14 A.M. on March 11, were to examine ventilation controls and to make examinations for hazardous conditions. This is a standard procedure to determine whether it is safe for men to enter the mine. This in effect was a pre-shift examination. These examinations were completed. *The examiners determined that the mine was safe*, and a work crew began entering the mine at 4:15 P.M. (emphasis added)

While it is clear that these two pre-shift examinations did in fact take place, it is also clear that they were both limited to that portion of the mine where the two crews were intended to work, which excluded 2 SEM. Ben Taylor told the joint House-Senate Committee, "two southeast main themselves were not firebossed." Clemons testified that, "I personally instructed no one to go into two southeast main . . ." According to Barrett:

. . . an examination of the entire mine had been made using company firebosses accompanied by MESA inspectors . . . *except for two southeast sections*. Now, that section we had given orders that no one was to go in there—I shouldn't say no one—they were given instructions that no one was to touch anything because of the possibility of destruction of evidence. *The only people who were in that section after I left was our MESA mine rescue team on the night before* (the early morning hours of March 10). (emphasis added.)

Thus at the time the thirteen men entered the mine on March 11, the environmental status of the 2 SEM was unknown. However, what was known was that the last reports from the rescue teams on March 9 indicated dangerous concentrations of methane gas in an area where ventilation had not been restored. As will be discussed more fully below, there is no indication in the record that any responsible MESA official adequately considered the possible hazards involved in sending the thirteen men into the mine on March 11.

Possible Ignition Sources.—As in the case of the first explosion, the ignition source which caused the second explosion has yet to be con-

clusively determined. However, unlike the first explosion, there is evidence indicating that the responsible MESA officials failed to seriously consider at least one possible ignition source that was known to exist prior to the second explosion—the Goodman locomotive fitted with an automatic air compressor.

As was discussed earlier in this report, the Goodman locomotive was one of the two that was sent into the upper portions of 2 SEM on March 9, immediately prior to the first explosion. The air compressor on this locomotive was an integral part of the machine's braking system and automatically "kicked on" when the air pressure dropped below a certain point. According to testimony, the compressor "kicked on" about every 15 or 20 minutes, and whenever engaged it caused a substantial arc which was more than sufficient to ignite an explosive concentration of methane gas. This locomotive-compressor remained in the mine following the first explosion and remains there today. In addition, there is no evidence to indicate that the locomotive-compressor was not operable—kicking on and off—throughout the period between the two explosions.

The two MESA officials who had the primary responsibility for considering the locomotive-compressor as a possible ignition source prior to the second explosion were William Clemons and Ben Taylor. Both testified that they were aware of the locomotive-compressor but never seriously considered it a hazard.

The first of the two to become aware of the nature of the locomotive was Ben Taylor who, along with Richard Combs (Scotia's general mine foreman), firebossed a part of the mine on March 10. According to the Joint House-Senate hearing transcript:

TAYLOR. (At) some point during this examination (fireboss inspection), during my conversation with Combs, I became aware that there were air brakes on one of the locomotives and the air brakes indicated a compressor.

Senator WILLIAMS. In other words, you did know there was this compressor down there, is that right?

TAYLOR. I became aware of it, yes, during this pre-shift examination.

WILLIAMS. Was it discussed that this could be a compressor that comes on automatically? Can it be a site of ignition?

TAYLOR. I believe we talked about that . . .

WILLIAMS. You did?

TAYLOR. Yes.

Later in his testimony Taylor said:

. . . I never became aware that there was any danger of this compressor . . . there was idle talk between Combs and I . . . I never thought about it again . . . it was something that did not occur in my mind, that it was a danger.

According to Richard Combs, "He (Taylor) said that he understood that there was a motor in there with a compressor on it, something about spark, and I said, 'Yes, it's in that area.' "

While Taylor said that he did not give the locomotive-compressor much thought, he obviously gave the matter some consideration because the next day, March 11, after the 13 men entered the mine but at least three hours before the explosion occurred, Taylor told Clemons about the locomotive.

As indicated above, Clemons was the MESA official responsible for directing the entire on-site rescue, recovery and investigation operations. He assumed that role shortly after the March 9 explosion and continued in it until sometime after the March 11 explosion. With

respect to the locomotive-compressor issue, Clemons told the House-Senate Committee:

There has been considerable speculation as to what ignited the explosive methane-air mixture in the second explosion and much of that speculation has been focused on the air compressor on the locomotive. In view of this, I consider it appropriate for me to disclose what knowledge I had of the compressor. Sometime during the early evening hours of March 11, 1976, the exact time I cannot recall, but would estimate it as being between 7:00 and 9:00 P.M. (the explosion occurred at 11:20 P.M.), Ben Taylor told me that Richard Combs, Acting Mine Foreman, during their pre-shift examination on the previous evening, had mentioned to him that one of the locomotives in 2 Southeast main was equipped with air brakes. Mr. Taylor told me that later he started associating air brakes with a compressor. He then commented that this could have been the cause of the first explosion. The manner in which Mr. Taylor related the information to me did not indicate that he was concerned about the situation and did not arouse any concern on my part. The conversation was very brief and was the first time that I had heard about the compressor during the 56 to 58 hours since the first explosion. If it had ever entered my mind, after learning of the percentage of methane and oxygen present in 2 Southeast main that there was an ignition source present, I would have immediately withdrawn all men from the mine.

Thus, we have two responsible MESA officials, both coal mine safety professionals, who were aware of the locomotive-compressor but neither considered it important enough to fully explore the hazardous possibilities of it being an ignition source. In his testimony before the House-Senate Committee, MESA Administrator Robert Barrett admitted that there had been a breakdown in communications during the period between the two explosions. We agree, and one of the most critical examples of that breakdown concerned the hazardous nature of the locomotive as a possible ignition source.

The Nature of MESA's Decisions.—Of the many rescue and recovery decisions made by MESA in the period between the two explosions perhaps the two most critical were:

1. The decision to immediately proceed with the investigation into the causes of the first explosion; and
2. The fateful decision to send the 13-man work crew into the mine on March 11.

Before detailing the nature of these two decisions, the MESA decision-making structure at the mine should be noted. As indicated, the chief operational MESA official responsible for directing the rescue and recovery operations was William Clemons, Assistant District Manager of the MESA Pikeville, Kentucky Office. Clemons assumed responsibility upon arriving at the mine at about 3:15 P.M. on March 9, and continued in this capacity—with the concurrence of MESA's top officials including the Administrator Robert Barrett—until after the second explosion on March 11. During the House-Senate Committee hearings, Clemons testified that while he had extensive training in mine rescue and recovery work, he had never before been involved in the aftermath of a mine explosion. According to the hearing transcript:

WILLIAMS. Had you ever before directed, or been a part of a rescue-recovery effort following a mine explosion?

CLEMONS. No, sir, I have not—I have had extensive training in mine rescue, and then been a member of a mine rescue team . . .

In terms of his responsibility at the Scotia mine, the following is instructive:

PERKINS. Who was in charge? Who took over and who was directing the activities at the mine site after the first explosion?

CLEMONS. I was directing the rescue and recovery activities.

PERKINS. Was there anybody over you?

CLEMONS. Anybody over me?

PERKINS. Giving you orders, or were you in charge of the sole activities there in making the decisions governing what was to be done?

CLEMONS. I was making the decisions.

While Clemons was in fact making the decisions at the mine there were many other MESA officials with whom he conferred and with whom he cleared his major decisions. These officials included Robert Barrett—MESA Administrator; John Crawford—MESA Assistant Administrator; R. Peluso—MESA Assistant Administrator for Technical Support; Jack Stevenson—MESA Chief of the Ventilation Group; Monroe West—MESA Sub-District Manager; Charles Sample—MESA Inspection Supervisor; Ben Taylor—MESA Inspection Supervisor; Lawrence Phillips—MESA District Manager and Clemon's immediate supervisor; W. R. Compton—MESA District Manager; and Herman Lucas—MESA Coal Mine Inspection Supervisor.

In addition to these MESA officials, others with input into the decision making process were representatives from the Kentucky Department of Mines and Minerals, the Scotia Coal Company, and Scotia miners' representatives.

The decision to immediately begin the investigation into the causes of the first explosion was taken less than 24 hours after the explosion was reported. Clemons testified that at about 5:00 A.M. on March 10, after the bodies had been taken out of the mine, he met with MESA officials Barrett, Crawford, Pelso, and Compton. At that meeting it was decided to begin the investigation on March 11, once the necessary preparatory work had been accomplished. At this time, the damaged roof condition was unknown and the anticipated work was considered routine. According to Clemons, "It was my conjecture during the conference that the exploration work that remained in 2 Southeast main entries would be only a matter of routine and could be accomplished easily without any undue hazards once additional ventilation was made available . . . the other conferees shared my views . . . I assumed MESA's position of the responsibility for the work of obtaining the additional ventilation and exploring the remainder of the 2 Southeast entries so that the area could be made ready for the investigating team."

Throughout the investigation into the Scotia mine disaster, the question of "why was there such a hurry to begin the investigation" was never fully addressed. The officials who made the decision knew, or should have known, that there were dangerous concentrations of methane in 2 SEM and that the rescue teams had not been able to restore ventilation in that area. In addition, no one had any idea of what caused the initial ignition. Given these conditions, the committee staff believes that the decision to proceed should have been considered with more caution and as something other than merely routine.

In an attempt to implement MESA's decision to proceed with the investigation, a work crew, preceded by a fireboss inspection, entered the mine on the afternoon of March 10. As noted, this crew worked until midnight attempting to restore the necessary ventilation but failed. Also, during this time the damaged roof was discovered and the crew was withdrawn.

While the initial decision to proceed with the investigation might have some justification, it is very hard to find any justification for the rapidity of the decision to send another work crew back into the mine on March 11. It is also difficult to justify the lack of caution exhibited by MESA in sending the March 11 crew into the mine.

According to Clemons, after the March 10th crew had been withdrawn, he asked Jack Stevenson—a MESA ventilation expert—to prepare a set of recommendations “as to what was necessary to acquire additional ventilation in 2 Southeast main.” A few hours later, Clemons held a meeting to discuss future actions. Clemons told the House-Senate Committee, “A meeting was held at 2:05 A.M., March 11, 1976, to discuss how to proceed in carrying out Mr. Stevenson’s recommendations . . . This meeting was attended by both MESA and Scotia Coal Company officials . . .” Clemons said that based upon the meeting a tentative plan was developed, calling for a second work crew to reenter the mine later that day. However, “before leaving the mine I informed everyone concerned that the plan was a tentative plan and that no part of it was to be implemented until I discussed it with my superiors”. Clemons stated that he called Assistant Administrator, John Crawford at about 5:00 A.M. and informed him of the plan; “Mr. Crawford concurred with the plan as I described it to him.”

By 3:00 P.M. that same day, March 11, Clemons had returned to the mine and found the work crew prepared to enter the mine. Clemons told the House-Senate Committee that after the crew entered the mine and began its work without incident, he left the mine at about 9:00 P.M., leaving Ben Taylor in charge. (At the time Clemons left the mine he was aware of the locomotive in 2 SEM). Clemons testified that, “At about midnight, just as I was getting into bed, Mr. Taylor telephoned me that he had unconfirmed reports of a second explosion.”

In terms of the decision to send the crew into the mine on March 11, the question must be raised as to why was there such a hurry to proceed and why was such little concern expressed over the possible hazards of reentering a mine where something was obviously wrong with the ventilation and where dangerous concentrations of methane were known to exist? Why did Taylor and Clemons fail to appreciate the possible hazards of the locomotive-compressor?

While it is impossible to provide definitive answers to these questions, the questions themselves must be raised. As a possible insight into the manner in which the decision was made to send the March 11th crew into the mine, the following exchange between Senator Williams and Clemons is instructive:

WILLIAMS. At the 2:05 A.M. (March 11) meeting . . . did you talk about the amount of methane that you knew was down there?

CLEMONS. No sir.

WILLIAMS. Did you talk about any agents that might cause a spark?

CLEMONS. No sir. I am not concerned with methane in itself.

WILLIAMS. You know I am surprised. You started (your testimony) when you first arrived (at these hearings), talking about calculated risk, calculated risk to go back into the mine. Now, you just said that you did not calculate any (risk)—you did not put any of these factors into calculating the risk of going in there with a team.

CLEMONS. The statement I made about the calculated risk is when you first go into a mine after a mine explosion.

WILLIAMS. Yes, I know that. But now you are—you did not calculate before sending the working team in there.

CLEMONS. The exploration that was performed during the initial rescue and recovery operation did not disclose any fires, did not disclose any smoke, and this was a pretty good indication to me that there was not an ignition source present.

WILLIAMS. Well now, what was the last reading, the last reading before all communication was stopped, because there was this second explosion? What was the last reading on methane and the last reading on carbon monoxide?

CLEMONS. The last—in two southeast main?

WILLIAMS. The last reading that you got out of that mine before you made the decision at the 2 A.M. meeting to send the team in to bolt the roof? You said you did not talk about methane and you did not talk about carbon monoxide. What were the readings that you talked about, that you would have talked about?

CLEMONS. From the time that the rescue teams had left the locomotives and recovered those bodies, and the bodies were brought to the surface, there was no one in by the fresh air base at the mouth of the two left, mouth of two southeast main. However, a rescue team did go over to the entry and make the methane and carbon tests.

WILLIAMS. That is the only possible reading you get? No one went down by the locomotive?

CLEMONS. Yes sir.

WILLIAMS. It just seems to me that that was the most critical thing to know before sending people back there to work, what the conditions were with the information you had.

CLEMONS. How was I going to determine what the conditions were in by the fresh air base? I knew I had 4 percent (methane) at the locomotive.

From this dialog it is clear that Clemons, at the time the March 11th crew went into the mine, was operating on the same assumptions he expressed at the March 10 meeting with top MESA officials; that the work to be done "would be only a matter of routine and could be accomplished easily without any undue hazards." It should be noted here that Clemons' decisions were made with the express and specific approval of top MESA officials.

Before concluding, one further point should be made with respect to the period between the two explosions, and that has to do with the information provided to those 13 men who went into the mine on March 11. According to the two survivors, Rick Parker and Ernest Collins, they were never briefed on the conditions in the mine:

PERKINS. Let me ask both of you gentlemen who survived . . . were you advised of the conditions of the mine before you went back in, either of you?

PARKER. No, sir, we were not briefed in any way. The only instructions that were given before we went inside the mine was by Mr. Rick Keene, who told us to make sure all the electrical supply was off going up into two southeast main, and also by our mine boss, Mr. Marvin Mangrum, which told us about the work that we were to perform over two southeast main.

PERKINS. You were not briefed in any way?

PARKER. No way at all.

PERKINS. Why was it that they took people in the mine without briefing them, people with no experience? (At least one of those killed on March 11, had never before been underground in a coal mine.)

COLLINS. I do not know of any.

III. PERIOD FROM THE SECOND EXPLOSION TO THE SEALING OF THE MINE

The period immediately following the second explosion is characterized more by events than issues. As for the decisions and actions taken during this period, we have no particular quarrel with MESA. Given the prevailing circumstances and conditions, the committee staff feels that everything done immediately after the second explosion was appropriate and reasonable.

As noted above, the 13-man work crew entered the mine at approximately 4:15 P.M. on March 11. Their assignment included ventilation restoration work and roof bolting the damaged roof at the entrance to 2 SEM. To accomplish this latter task, a roof bolting machine had to be moved from another section of the mine to the 2 SEM entrance. Also, a certain amount of repair work to the roof bolting machine was necessary.

Of the 13 men, 3 were MESA officials and 10 were employees of the Scotia Coal Company. According to the testimony of the two survivors—Rick Parker and Ernest Collins—they had taken the cable for the roof bolting machine back to connect it to a transformer. Parker and Collins testified that they were in the process of changing the plugs on the cable, prior to plugging it into the transformer, when the explosion occurred at about 11:20 P.M. At the time of the explosion, the survivors were approximately 150 feet from the main work crew. Following the explosion, Parker and Collins put on their self-rescue equipment and walked out of the mine. It was on their way out that they called the surface and reported the explosion. The two survivors arrived at the surface at about 12:12 A.M. on March 12.

At 1:00 A.M., MESA's national office in Arlington, Virginia was notified of the second explosion. Orders were given to airlift MESA mine rescue teams back to the mine, and to "reactivate MESA's Mine Emergency Operations Plan." The same mining companies that had previously sent rescue teams to Scotia responded a second time. Top MESA officials, including Robert Barrett, left Arlington for the Scotia mine at 2:20 A.M. and arrived at 5:30 A.M.

According to the testimony of William Clemons, he was home when informed of the second explosion at approximately midnight. He immediately left for the mine, arriving at 1:00 A.M.

Upon my arrival, I was informed that a second explosion had occurred, that two men had escaped from the mine and that eleven were unaccounted for. I talked to the two men who had escaped and got all the information they could furnish me. From this information, particularly from the extent of the forces, it was obvious to me that it might be necessary to utilize the air shaft in by 2 Southeast main in the rescue effort. With this in mind and no present means of entering the shaft, I made arrangements for mobil cranes to be sent to the shaft. There was a constant increase of CO (carbon monoxide)—from 800 ppm to 2,000 ppm—at the fan which indicated a strong possibility of a mine fire and caused much concern for a period of about two hours. I then asked several Scotia Coal Company officials, responsible officials from nearby coal companies who were present, and several MESA officials to meet with me for the purpose of discussing the approach we should take in the rescue efforts . . .

Some felt that the effort should be approached from the shaft and some felt that we should approach it from the main slope entries. After listening to all their views, I decided that we would approach it from both directions and that the final approach would be dictated by the conditions encountered.

According to Clemons, the initial entry into the mine was made by two MESA officials on foot at the slope entry followed by two rescue team members. The rescue team members traveled to near the intersection of 2 East main before observing any evidence of violence. They continued up 2 East, about 9 crosscuts, where they discovered that the ventilation was reversed. The men were immediately withdrawn from the mine, and two rescue teams were sent to the entrance of 2 East to establish a fresh air base and to make an exploratory investigation to determine the extent of ventilation damage in the area. These rescue teams reported that an overcast had been damaged near the

entrance to 2 East and that some 126,000 cubic feet of air per minute was being short-circuited at that point.

Clemons stated that based on these reports, it was decided to withdraw the rescue teams from the 2 East area and to concentrate all rescue efforts via the air shaft.

Prior to the rescue teams entering the air shaft in the area of 2 SEM, it had been inspected by MESA, Company, and miner representative officials. This examination found the ventilation controls intact and the air flowing in the proper direction and course. Clemons then ordered the rescue teams to enter the shaft where he briefed them at about 9:45 A.M. on March 12.

According to Clemons, "Following my instructions closely, the teams advanced bare-faced to the entrance of 2 Southeast main where they found the eleven men (approximately 12:00 noon) . . . Since all eleven were dead, and I had drastic fears of another explosion, I told the rescue teams to return to the shaft bottom as quickly as possible (from which they were withdrawn from the mine without recovering the eleven bodies.)"

According to MESA Administrator Barrett, who had been at the mine since 5:30 A.M. on March 12, during the remainder of March 12 and on March 13, meetings were held among representatives of mine management, the Scotia Employees Association, the Kentucky Department of Mines and Minerals, and MESA, joined by representatives from the Secretary's Office of the Department of the Interior . . . the consensus decision resulting from these meetings was to seal the Scotia mine." Thus, on March 19, at 2:10 P.M., all openings to the Scotia mine were closed.

IV. PERIOD FROM THE MINE SEALING TO THE PRESENT

Since the mine was sealed on March 19, a number of Scotia related events have transpired including:

- One day of public hearings in Washington, D.C., conducted by the Senate Subcommittee on Labor on March 24, 1976;
- The convening of a MESA investigation panel which held nine days of public hearings on April 5, 6, 7, 8, 9, 27, 28, 29, and 30, 1976, in Whitesburg, Kentucky;
- Three days of public hearings conducted by a joint Committee of the House Education and Labor Committee and the Senate Labor and Public Welfare Committee on May 7, 1976, in Whitesburg, Kentucky, and on May 13 and June 16, 1976, in Washington, D.C.;
- MESA's announcement on June 18, 1976, of tentative plans to reopen the Scotia mine; and
- On July 16, 1976, the reopening of the mine was begun.

Throughout this period there have been two issues that have generated some public controversy:

1. The composition of the MESA investigation panel;
2. The manner in which the 11 bodies are being recovered.

With respect to the composition of the MESA investigation panel, the following individuals served as members:

- Robert Barrett, MESA administrator, panel chairman;
- Thomas Mascolino, Assistant Solicitor, U.S. Department of Interior;

- Fred Karem, Deputy Undersecretary of the U.S. Department of Interior;
- Harrold Kirkpatrick, Commissioner of the Kentucky Department of Mines and Minerals;
- George Eadie, Professor of General Engineering, University of Illinois;
- George McPhail, Senior Mine Rescue Officer, Province of Ontario, Canada.

Of this group, the first factor to be noted is that two of the members—Barrett and Kirkpatrick—were directly involved in the events which occurred at the Scotia mine following the first explosion. It is not our intention to question the integrity of either man—both are outstanding professionals in their field—however, the very fact that they were investigators of events to which they were parties should be noted for the record. While there is nothing in the record to suggest that either man conducted himself in a manner detrimental to the investigation, the fact remains that both, in varying degrees, participated in the decisions that were made following the first explosion.

The second point to be noted is the glaring absence from the MESA panel of any miner representatives. Even though the Scotia mine was, in effect, a non-union mine, the miners who work at the Scotia mine have a direct and continuing interest in the twin disasters. It seems to us that a miner representative, at the very least, would have added to the panel's credibility.

The MESA hearings themselves have been subject to some criticism by the news media, Scotia miners, and company officials because of the manner in which they were conducted. The only witnesses to be called were those selected by MESA and there was little effective cross-examination by anyone other than the MESA panel.

In terms of the recovery of the 11 bodies that have remained entombed in the Scotia mine since March 11, the manner in which they are being recovered is questionable. Following the decision to reopen the mine, MESA Administrator Barrett assured the families of the victims that the recovery would proceed as quickly as possible. Barrett was reported to have initially stated that the recovery would proceed through the ventilation shaft which enters the mine some 3,000 feet from where the bodies are located. It was estimated that such a route would enable the bodies to be recovered in about a week.

However, Barrett has reversed himself on the recovery route and has approved a Scotia Company plan that approaches the recovery of the bodies through the main shaft. Under this plan, it has been estimated that the recovery would take a minimum of 60 days. At the present time reports from the mine indicate that the recovery operation is confronted with difficulties due to mine flooding.

The point to be made is that by following the Company's plan the mine will be placed back into production much sooner than if the recovery took place through the ventilation shaft. Thus, it appears to the committee staff that MESA—which still effectively controls the mine—acquiesced to the Company's production oriented wishes, rather than insisting on the more humane approach of affording the families of the eleven men the opportunity of providing their loved ones with a decent and respectful burial.

CHART A

SCOTIA COAL MINE—SUMMARY OF VIOLATION NOTICES AND CLOSURE ORDERS, MAY 13, 1970 TO MAR. 9, 1976

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 |
|---|------|------|------|------|------|------|------|
| Total number of violation notices issued..... | 79 | 94 | 156 | 116 | 103 | 214 | 92 |
| Total number of closure orders issued..... | 6 | 23 | 13 | 24 | 18 | 23 | 3 |
| Total number of 104(a) closure orders issued (imminent danger)..... | 5 | 7 | 4 | 9 | 5 | 9 | 0 |
| Total number of violation notices and closure orders..... | 85 | 117 | 169 | 140 | 121 | 237 | 95 |

Source: Mine Safety Enforcement Administration, U.S. Department of the Interior.

CHART B

SCOTIA COAL MINE—SUMMARY OF SAFETY AND HEALTH VIOLATIONS, JANUARY 1974 TO FEBRUARY 1976

| Category of violation | Total number of— | |
|---|------------------|----------------|
| | Violations | Closure orders |
| Ventilation—30 CFR, pt. 75, subpt. D..... | 63 | 10 |
| Electrical equipment general—30 CFR, pt. 75, subpt. F..... | 41 | 1 |
| Combustible materials and rock dusting—30 CFR, pt. 75, subpt. F..... | 86 | 8 |
| Fire protection—30 CFR, pt. 75, subpt. L..... | 53 | 3 |
| Dust standards—30 CFR, pt. 70, subpt. B..... | 28 | 0 |
| Trailing cables and grounding—30 CFR, pt. 75, subpts. G and H..... | 10 | 3 |
| Miscellaneous—30 CFR, pt. 75, subpt. R..... | 71 | 4 |
| Roof support—30 CFR, pt. 75, subpt. C..... | 23 | 7 |
| Mandatory safety standards, surface coal mines and surface work areas of underground coal mines—30 CFR, pt. 77..... | 28 | 2 |
| Maps, hoisting and mantrips—30 CFR, pt. 75, subpts. M and O..... | 17 | 1 |
| Total..... | 420 | 39 |

Source of data: Senate Subcommittee on Labor—Staff Study.

CHART C

Scotia Coal Mine—Summary of ventilation violations, January 1974–February 1976

| Description of violation | Total number of times violation was cited |
|---|---|
| Not enough air reaching the working face..... | 26 |
| High methane concentration..... | 7 |
| Approved ventilation plan not being followed..... | 18 |
| Line brattice out of position..... | 6 |
| Methane monitor inoperative..... | 3 |
| Permanent stopping was installed with incombustible material..... | 1 |
| Water sprays not provided for the head drive..... | 1 |
| Fans at new returns section not equipped with a pressure gage and an automatic signal device to give alarm..... | 1 |
| Tests for methane were not being taken at 20-minute intervals..... | 1 |
| Permanent brattices had not been constructed..... | 2 |
| Lost coal and coal dust..... | 1 |

Source: Mining Enforcement and Safety Administration, U.S. Department of Interior.

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